

Issuance Date: August 31, 2012  
Pre-Bid Meeting Date: September 5, 2012  
Bid Opening Date: September 13, 2012  
BMA Approval Date: September 24, 2012

**INVITATION TO BID  
AIR HANDLING UNIT REPLACEMENT  
POLICE DEPARTMENT**



CITY OF GERMANTOWN  
1930 SOUTH GERMANTOWN ROAD  
GERMANTOWN, TENNESSEE 38138



# CITY OF GERMANTOWN TENNESSEE

1930 South Germantown Road • Germantown, Tennessee 38138-2815  
Phone (901) 757-7200 Fax (901) 757-7292 www.germantown-tn.gov

Date: August 31, 2012

The City of Germantown, Tennessee, will accept Bids on:

## **AIR HANDLING UNIT REPLACEMENT**

Bid shall be mailed in a **sealed envelope** marked **"AIR HANDLING UNIT REPLACEMENT"** in the lower left-hand corner of the envelope and addressed to Purchasing Officer, City of Germantown, P. O. Box 38809, Germantown, TN 38183-0809 or, **if using express mail** (Fed Ex, Priority Mail, etc), address to 1930 S. Germantown Rd., Germantown, TN 38138. Please place in a sealed envelope inside the express mail packaging. *(Bid must be received by the City prior to the time indicated below.)* **Please mark envelope with the name of the Bid.**

**Bid shall be opened at 1930 S. Germantown Rd at 2:00 p.m. on September 13, 2012.**

**Mandatory Pre-bid Meeting will be held on September 5, 2012 at 9am at Municipal Building at 1930 S. Germantown Road in Germantown, Tennessee.**

**All purchases are F.O.B. Germantown, Tennessee.**

The City reserves the right to accept or reject any Bid, to accept a Bid containing variations from these specifications if the Bid so merits, and to accept partial Bids. *Bids must be submitted on the Bid document that the City issues and it must be signed.*

The Successful Bidder shall be prohibited from discriminating against any individual due to his race, creed, color, national origin, age or sex.

The City may waive any informalities or minor irregularities. The Board of Mayor and Aldermen is the final authority and shall have the right to reject any single Bid or all Bids submitted.

See attached Specifications, Bid Sheet, Bid Bond and Drug and Alcohol Testing Acknowledgment Statement and Affidavit, along with Company's Testing Policy, that must be returned as part of the Bid. Returning the form for disclosure of the Title VI and Title IX information is voluntary.

The Standard Germantown Construction Contract, Payment Bond, Performance Bond and the required Insurance Certifications are included and will be required from the selected Bidder.

Sincerely,

*Lisa Piefer*

Lisa A. Piefer  
Purchasing Officer

## ADVERTISEMENT FOR BIDS

Separate sealed BIDS will be received by the City of Germantown at the office of the Purchasing Officer at 1930 South Germantown Road, Germantown, Tennessee until 2:00 p.m., Local Time, on the 13<sup>th</sup> day of September, 2012, and then at said office publicly opened and read aloud for the construction of:

### Project Air Handling Unit Replacement

The Project is briefly described as follows: Remove existing AHU-6 and install new air handling units as scheduled on drawings and provide new automatic control valves; new chilled water piping; modifications to existing ductwork to accommodate new chilled water piping and provide Staefa control system for new air handling unit and connect to existing air handling unit controls that serves AHU – 6 and other related work complete in every detail ready for the City's beneficial use as specified herein and/or indicated on the contract drawings and specifications.

The Contractor's classification shall be **CMC-C**.

Mandatory Pre-Bid Meeting is September 5, 2012 at 9am at the Municipal Center at 1930 S. Germantown Road in Germantown, Tennessee.

Copies of the CONTRACT DOCUMENTS and plans and specifications may be examined and obtained at the following location(s):

City of Germantown - Owner  
Purchasing Officer  
1930 South Germantown Road  
Germantown, TN 38138

Examined Only at:

Builder's Exchange  
642 S. Cooper Street  
Memphis, Tennessee 38104

F. W. Dodge McGraw Hill Information Services Co.  
[www.construction.com](http://www.construction.com)

Each BID must be submitted on forms provided in the BID PACKET DOCUMENTS provided and either accompanied by a BID BOND, properly executed on the form provided, or a Certified check or Cashier's check drawn on a National or Tennessee Bank in the amount of five percent (5%) of the TOTAL BID PRICE and payable to the City of Germantown.

For construction projects, the BIDDER'S license number, its expiration date, and that part of the classification applying to the BID, together with certain information regarding subcontractors, must appear on the envelope containing the BID, otherwise the BID shall not be opened or considered. For additional details on this requirement, see Document C of the attached document headed "Information for Bidders". The successful BIDDER shall be prohibited from discriminating against any individual due to the individual's race, creed, color, national origin, age, or sex.

The City may waive any informalities or irregularities. The Board of Mayor and Aldermen of the City is the final authority and shall have the right to reject any single BID or all BIDS submitted.

Purchasing Officer  
City of Germantown, Tennessee

## **SPECIAL NOTICE**

### **DOCUMENTS:**

All contractors bidding on construction projects for the City of Germantown are required to use the Documents contained herein.

### **Insurance:**

It is recommended that contractors consult with their insurance agent(s) to assure themselves that they can obtain the required insurance coverage set out in the Insurance Documents and that their insurance agent(s) is authorized to execute the required Certificate of Insurance Coverage.

### **Documents to be Executed:**

A BIDDER should only execute the BID and BID BOND, DRUG AND ALCOHOL ACKNOWLEDGMENT STATEMENT AND AFFIDAVIT (**Form D-2**) along with Company's Testing Policy and ADDENDA ACKNOWLEDGMENT FORM (**Form F (A-1)**), if any, when making a BID. The remaining forms contained in the CONTRACT DOCUMENTS will be required to be executed and complied with only by the successful BIDDER after notice of the award has been issued.

### **Additional Information**

General and/or technical questions relating to this solicitation shall be submitted in writing to the City of Germantown, City Purchasing Officer, at [Purchasing@germantown-tn.gov](mailto:Purchasing@germantown-tn.gov)

## INFORMATION FOR BIDDERS

NOTICE - It is necessary for prospective BIDDERS to read the INFORMATION contained below to understand exactly how to submit a BID, what Documents must accompany the BID, what information should be on the outside of the envelope containing the BID, what the BIDDER legally obligates itself for by submitting a BID, and the reason why the City of Germantown (CITY) included the other Documents in this BID PACKET. Failure to carefully read and understand the INFORMATION contained below may either cause the BIDDER'S BID not to be considered or accepted by the CITY or cause the BIDDER to legally obligate itself to more than it realizes. The BID Document and the other Documents contained in this BID PACKET are legal Documents; and if the BIDDER does not understand any of them, the BIDDER should consult with its attorney. Only the Document forms included in this BID PACKET may be used.

1. Each BID must be submitted on the form provided in this BID PACKET and be accompanied by either a BID BOND, properly executed, on the form provided (**Document G**) or a Certified or Cashier's check drawn on a National or Tennessee Bank in the amount of five percent (5%) of the TOTAL BID PRICE and payable to the CITY OF GERMANTOWN. The BID, with the BID BOND or Certified or Cashier's check, must be placed in a sealed envelope and delivered to the office of the City Purchasing Officer, 1930 South Germantown Road, Germantown, Tennessee 38138 on or before the time set out in the ADVERTISEMENT FOR BIDS; and then, at said office, the BID and all other BIDS shall be publicly opened and read aloud.

2. A BID shall be invalid if the BIDDER fails to deposit it at the designated location prior to the time and date for receipt of BIDS as indicated in the ADVERTISEMENT FOR BIDS. The CITY will not consider any bid received at the CITY'S designated location for the bid opening after the exact time specified for receipt. The CITY reserves the right to consider BIDS determined by the CITY, in the CITY'S sole discretion, to have been received late due to mishandling by the CITY after receipt of the BID and prior to any award.

3. If necessary, and within no later than two (2) days prior to the date established for receipt of BIDS (except as provided in 4 below), the CITY'S Purchasing Division shall e-mail ADDENDA to each person or firm recorded by the Purchasing Division as having acquired a BID package.

4. The CITY will not orally interpret the meaning of the plans, specifications or other PRE-BID documents. BIDDERS must submit all questions about the meaning or intent of PRE-BID documents in writing to the CITY'S Purchasing Officer. The CITY must receive said written questions at least three (3) days prior to the date fixed for the opening of BIDS. The CITY will reply to such questions with written ADDENDA e-mailed to all parties recorded by the CITY'S Purchasing Division as having acquired a BID PACKET. The CITY'S Purchasing Division shall furnish such written ADDENDA not later than the date specified in Bid Documents prior to the date fixed for the opening of BIDS. Only questions answered by the CITY in written ADDENDA will be binding; all other interpretations shall be of no effect.

Failure of any BIDDER to receive any such ADDENDA shall not relieve such BIDDER from any obligation under its BID, as submitted. All ADDENDA so issued shall become part of the CONTRACT DOCUMENTS. BIDDERS shall submit all general and/or technical questions relating to the BID PACKET in writing to the CITY of Germantown Purchasing Officer, Office of Purchasing, via e-mail. If any questions or responses require revisions to the solicitation as originally published, such revisions will be made by the CITY by written ADDENDA only, as described above. If the BID solicitation includes a separate contact person for technical information, BIDDERS are cautioned that any written or oral representations made by any engineer, CITY representative or other person(s) that appear to change materially, conflict with, or modify any portion of the solicitation shall not be relied upon and shall be of no effect. Only written ADDENDA issued by the CITY shall be effective as an amendment or as clarification of the BID solicitation. BIDDERS should contact the CITY'S Purchasing Officer at [purchasing@germantown-tn.gov](mailto:purchasing@germantown-tn.gov) for a determination of whether an oral or written representation of any CITY representative or other person requires the CITY to issue an ADDENDUM.

5. A BIDDER may modify or withdraw a BID by an appropriate document executed and delivered to the Purchasing Division at any time prior to the opening of BIDS.

6. As applicable, the product(s) specified in the BID PACKET DOCUMENTS shall be the basis for the BID. The BIDDER shall not be allowed to substitute another product without the CITY'S prior written approval. A BIDDER shall submit any request for substitution to the CITY no later than seven (7) days prior to the date fixed for the opening of the BIDS. The requesting BIDDER shall submit three (3) copies of each such request for substitution, which request shall include:

- (a) Complete data substantiating the compliance of the proposed substitution with the contract documents;
- (b) For products – product identification (including manufacturer's name and address) and manufacturer's literature (including product description, performance and test data and reference standards);
- (c) Sample(s);
- (d) Name and address of similar projects on which the product was used and date of product's installation;
- (e) For manufacturing methods – detailed description of the proposed methods and drawings illustrating the methods;
- (f) Itemized comparison of proposed substitution with product or method specified;
- (g) Data relating to changes in construction schedule; and
- (h) Identification of changes or coordination required.

7. In making a request for substitution, a BIDDER represents that such BIDDER has personally investigated the proposed substituted product or method and that the BIDDER has determined that the proposed substitute product or method is equal or superior in all respects to that specified, that the BIDDER will provide the same guarantee for the substitution as for the product or method specified in the BID PACKET DOCUMENTS, and that the BIDDER will coordinate the installation of accepted substitutions into the WORK, making all changes for the WORK to be complete in all respects.

8. Substitutions will not be considered when: they are indicated or implied on shop drawings or product data submittals without a formal request submitted in accordance with Paragraph 6; or acceptance will require substantial revision of the CONTRACT DOCUMENTS.

9. Any request for substitution received within six (6) days or less from the date fixed for the opening of BIDS will not be considered.

10. If product substitution is acceptable to the CITY, BIDDERS shall receive notification by Addendum prior to the BID date. If no approval notification through ADDENDUM is received by the BIDDER, the BIDDER shall submit the original specified product.

11. If this BID is for a construction project, the provisions of Tennessee Code Annotated Sections 62-6-101 et seq., Relating to General Contractors, will be applicable and same are incorporated herein by reference. All invited BIDDERS on a construction project are advised that a BIDDER must provide evidence of a license in the appropriate classification before its BID may be considered. The envelope containing the BID must be plainly marked with the following information:

- (1) The BIDDER'S and any electrical, plumbing, heating, ventilation, and air conditioning subcontractor's name and address;
- (2) The respective Tennessee Contractor's License Numbers of the BIDDER and the aforesaid subcontractors and the expiration dates of each; and
- (3) That part of the license classification applying to the BID for all of the foregoing.

Otherwise the BID shall not be opened or considered except that if that BID is in an amount less than \$25,000, only the name of the BIDDER for the contract and not the names of any subcontractors need to appear on the outside of the envelope.

12. The CITY has an employee drug and alcohol testing program, and a copy of the relevant portions thereof is enclosed. You must have a testing program for your employees that is at least as stringent as that of the City of Germantown. You must submit a copy or a summary of your drug and alcohol testing policy with your bid or proposal by attaching it to the enclosed Drug and Alcohol Testing Acknowledgement Statement and Affidavit (**Form D-2**). IF YOU DO NOT HAVE A TESTING PROGRAM THAT MEETS THIS REQUIREMENT, YOUR BID

CANNOT BE ACCEPTED BY THE CITY. THIS IS A REQUIREMENT OF TENNESSEE LAW AND CANNOT BE WAIVED BY THE CITY.

13. If you choose to do so, attach a completed voluntary Title VI and Title IX form with the BID (Form E-2).

14. All blank spaces for BID prices must be filled in, in ink or typewritten, and the BID form must be fully completed and executed when submitted. Only the original of the BID is required. The CITY may waive any informalities or defects and may reject any and all BIDS. Any BID may be withdrawn prior to the scheduled BID opening time or authorized postponements thereof. No BIDDER may withdraw his BID within sixty (60) days after the actual time of the BID opening. Should there be any reason why the contract cannot be awarded within the specified time, the time may be extended by mutual agreement between the CITY and the successful BIDDER.

15. All CONTRACT DOCUMENTS are part of the CONTRACT AND AGREEMENT (sometimes referred to as the "C & A"). A BIDDER should only execute the BID, BID BOND, Drug and Alcohol Acknowledgement Statement and Affidavit (**Form D-2**) along with Company's Testing Policy and (as applicable) ADDENDA ACKNOWLEDGEMENT FORM (**Form F(A-1)**) when making a BID. The remaining Document forms in the BID PACKET should not be executed at the time of making a BID, as they are the Document forms which either contain information for the successful BIDDER or are Document forms the successful BIDDER will be required to execute and with which the successful BIDDER must comply. The BIDDER'S attention is directed to these Document forms.

16. The CONTRACT DOCUMENTS contain all the provisions required for the construction of the PROJECT. Information obtained from any officer, agent or employee of the CITY or any other person shall not affect the risks or obligations assumed by the BIDDER or relieve the BIDDER from fulfilling any of the conditions of the C & A or the other CONTRACT DOCUMENTS.

17. BIDDERS must satisfy themselves of the accuracy of the estimated quantities in the BID SCHEDULE and other matters that shall be applicable by examination of the site and a review of the CONTRACT DOCUMENTS, including any addenda. After BIDS have been submitted, a BIDDER shall not be legally entitled to assert that there was a misunderstanding concerning the quantities or conditions of the work to be performed, the quantities, qualities or conditions of the equipment and/or supplies to be furnished or any other terms or conditions of the C & A or the other CONTRACT DOCUMENTS.

18. The CITY will consider only those BIDS that are offered by BIDDERS who can show evidence of satisfactory completion of the work that is comparable in size and type of the WORK that is contemplated in the CONTRACT DOCUMENTS or, in the case of a new business, the ability to perform the work contemplated.



19. The CITY shall determine which is the lowest responsible and best BIDDER for the PROJECT and shall deliver to the successful BIDDER a NOTICE OF AWARD accompanied by the C & A and the Document forms to be executed and returned with the executed C & A. These Document forms include the PAYMENT AND PERFORMANCE BONDS and the CERTIFICATE OF INSURANCE COVERAGE. The successful BIDDER shall be required to return the C & A and the required attachments, properly executed, to the CITY within fifteen (15) days after receipt of same. Upon approval of same, the CITY shall forward the successful BIDDER a NOTICE TO PROCEED (**Form Q**).

20. Once the CITY determines which party is the successful BIDDER, that BIDDER must, as indicated above, fully comply with the BID and execute and deliver to the CITY the C & A and other required documents. Upon its failure to timely do so, the CITY shall be authorized to advise the BIDDER that it is in default and that the CITY shall proceed to contract with another to fulfill the contract with which the defaulting BIDDER has failed to comply; and the defaulting BIDDER and the surety on its BID BOND shall be liable for all damages suffered by the CITY due to such default. The obligation of the defaulting BIDDER shall not be limited to the amount of its BID BOND, although the liability of the surety on such BID BOND will be limited to the amount thereof.

21. The BIDDER shall be responsible for obtaining any and all permits required by the CITY to successfully complete this project. The CITY will waive the costs associated with these permits. Applications for building, plumbing, mechanical and electrical are available at the City of Germantown offices, 1930 South Germantown Road.

22. If required, the successful low apparent BIDDER shall furnish the CITY, within forty-eight (48) hours after BIDS are received, the following detailed information for the CITY'S use:

- (a) A cost breakdown analysis of all areas of WORK contained in the BID PROPOSAL, including a separation of all labor and material items; and
- (b) A list of names of subcontractors, other persons or organizations (including those who are to furnish materials or equipment fabricated to a special design) proposed for such portions of the WORK. The BIDDER will be required to establish, to the satisfaction of the CITY Engineer and the CITY, the reliability of the proposed subcontractors to furnish and perform the WORK described in the sections of the specifications pertaining to such proposed subcontractor's respective trades. Subcontractors and other persons and organizations proposed by the BIDDER and accepted by the CITY and CITY Engineer must be on the WORK for which they were proposed and accepted, and shall not be changed without the written approval of the CITY and the CITY Engineer.

This list shall be submitted at the time the Cost Breakdown Form is presented to CITY, as set forth in this paragraph 22.

23. The CITY may, in its discretion, conduct a PRE-BID conference in the CITY on the date and at the time and place to be selected by the CITY. Any party interested in bidding should so advise the CITY in writing by e-mailing notice of such interest to the CITY'S Purchasing Officer at [purchasing@germantown-tn.gov](mailto:purchasing@germantown-tn.gov) . That party will receive notice of the date, time and place of the PRE-BID conference. BIDDERS are required to attend this conference and to submit written questions in advance of the conference to the Purchasing Officer. Additional written questions may be submitted at the conference. If the CITY has set a PRE-BID conference, the conference shall be held on the date at the time and place set forth herein below.

**MANDATORY PRE-BID CONFERENCE TO BE HELD:**

**DATE:** September 5, 2012

**TIME:** 9am CST

**LOCATION:** Municipal Center Triangle Room

1930 S. Germantown Road

Germantown, TN 38138

## **CITY OF GERMANTOWN DRUG AND ALCOHOL TESTING POLICY**

All City of Germantown employees are subject to reasonable suspicion drug and alcohol testing. Employees in safety-sensitive positions, including, without limitation, police, fire and those who hold a commercial driver's license, are subject to pre-employment, reasonable suspicion, post-accident and random drug and alcohol testing. All BIDDERS are required to submit an affidavit, in the form attached hereto, that attests that such bidder operates a drug-free workplace program or other drug or alcohol testing program with requirements at least as stringent as that of the program operated by the City of Germantown. BIDDERS are hereby notified pursuant to Public Chapter 693 of the Public Acts of 2002 (codified as T.C.A. Section 50-9-114) that employers shall have seven (7) calendar days from the date that the successful BIDDER and the City of Germantown enter into the Contract & Agreement to file suit in the Shelby County Chancery Court to contest the Contract & Agreement issued to the successful BIDDER on the grounds that it violates said Public Chapter due to the fact that the successful BIDDER did not comply with said Public Chapter. Employers that do not contest the Contract & Agreement within said seven (7) calendar days by filing suit in Shelby County Chancery Court shall waive their rights to challenge the Contract & Agreement for violation of the provisions of Public Chapter 693.

**DRUG AND ALCOHOL TESTING ACKNOWLEDGMENT STATEMENT  
AND AFFIDAVIT**

Comes \_\_\_\_\_, for and on behalf of  
(*Printed name of Principal Officer of Company*)  
\_\_\_\_\_, (the "Company") and makes oath that: (i) the  
Company has received a copy of the relevant portions of the City of Germantown Drug and  
Alcohol Testing Policy; (ii) the Company understands that it must have a drug and alcohol  
testing policy at least as stringent as that of the City of Germantown; and (iii) the Company has  
in effect a drug and alcohol testing policy at least as stringent as that of the City of Germantown.

Attached hereto is a summary of the relevant portions of the Company's drug and alcohol  
testing program or a complete copy thereof.

\_\_\_\_\_  
Signature

Title: \_\_\_\_\_

Sworn to and subscribed before me, a Notary Public, this \_\_\_\_\_ day of \_\_\_\_\_,  
2012.

\_\_\_\_\_  
Notary Public

My Commission Expires:

\_\_\_\_\_

## **DRUG AND ALCOHOL ABUSE**

### **GENERAL POLICY**

This is to establish the City's policy regarding drug and alcohol use and the unlawful possession of controlled substances on City of Germantown premises. The City of Germantown Medical Benefits Program provides clinical treatment for employees and dependents who are experiencing the following disorders or conditions: Mental and Nervous Disorders Treatment, Alcohol and Drug Dependency. The City also provides an Employee Assistance Program.

### **SCOPE**

All employees of the City of Germantown.

### **PROVISIONS**

- A. City employees shall not take or be under the influence of any alcohol or illegal drugs while on duty. Employees may not be under the influence of legally prescribed or over-the-counter medications while on duty if such medications would impair their ability to safely and effectively perform their job.
- B. City employees are prohibited from the use, possession, manufacture, distribution and sale of drugs at any time, or of alcohol while on duty or while in or on City property or in City vehicles.
- C. All property belonging to the City is subject to inspection at any time without notice. Property includes, but is not limited to, vehicles, desks, containers, files, and storage lockers.
- D. City employees who have reason to believe another employee is illegally using drugs or narcotics, shall report the facts and circumstances immediately to the supervisor.
- E. All City employees are subject to reasonable suspicion drug and alcohol testing. Employees in safety-sensitive positions, including without limitation, police, fire and those who hold a commercial driver's license, are subject to pre-employment, reasonable suspicion, post-accident and random drug and alcohol testing. Testing procedures and other rules relating to drug and alcohol abuse are described in the City Drug and Alcohol Testing Policy or the respective department drug and alcohol policies.
- F. Failure to comply with the intent or provisions of this policy or the applicable drug and alcohol testing policy may be used as grounds for disciplinary action, up to and including termination. (See Policy on Disciplinary Action.)

## **TITLE VI INFORMATION**

1. The City of Germantown agrees to comply with the Title VI of the Civil Rights Act of 1964 (42 U.S.C. 2000d, et seq.), and the Department of Transportation Implementing Regulations (49 CFR Part 21) relative to the Contract which is the subject hereof.
2. The Contractor is requested, but is not obligated, to include the attached disclosure sheet, Voluntary Title VI and Title IX Form, with the Contractor's sealed bid.

## **VOLUNTARY TITLE VI AND TITLE IX FORM**

Attach form to sealed bid

For Title VI and Title IX compliance, the Contractor's voluntary disclosure of the following information is requested.

1. Number of Contractor's Employees Who Are:

\_\_\_\_\_ Male                      \_\_\_\_\_ Female

2. Number of Contractor's Employees Who Are:

\_\_\_\_\_ Caucasian                      \_\_\_\_\_ African-American

\_\_\_\_\_ Other (please specify) \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

## BID

Bid of:

---

(Name of Bidder)

---

(Address of Bidder)

organized and existing under the laws of the State of \_\_\_\_\_ and doing business as \_\_\_\_\_ (indicate: "a corporation", "a partnership", "an individual", a "limited liability company" or otherwise, as applicable).

To: City of Germantown - Owner  
City Purchasing Officer  
1930 South Germantown Road  
Germantown, Tennessee 38138

In compliance with your ADVERTISEMENT FOR BIDS, BIDDER hereby proposes to furnish all necessary labor, machinery, tools, apparatus, materials, equipment, services, and other necessary supplies in strict accordance with the terms and conditions of the plans, specifications and CONTRACT DOCUMENTS within the number of consecutive calendar days and at the prices set forth below for the construction of:

### **Project: Air Handling Unit Replacement**

By submitting this BID, BIDDER certifies that this BID has been arrived at independently without consultation, communication or agreement as to any matter relating to this BID with any other BIDDER or with any other competitor.

BIDDER agrees, upon receipt of the NOTICE OF AWARD accompanied by the CONTRACT AND AGREEMENT (C & A) and all required attachments, to cause same to be properly executed and returned to the CITY OF GERMANTOWN within fifteen (15) days thereafter. BIDDER further agrees, upon receipt of the NOTICE TO PROCEED, (i) to commence work on the PROJECT not later than the last date stated in the Notice to Proceed as to which the BIDDER may commence to proceed, and (ii) to complete the PROJECT within Thirty (30) consecutive calendar days after such date; otherwise, to pay the CITY OF GERMANTOWN as liquidated damages the sum of Two Hundred dollars (\$200.00) for each consecutive calendar day thereafter as provided in the GENERAL PROVISIONS. BIDDER acknowledges receipt of addenda(s) **Form F (A-1)**.

BIDDER agrees to perform all work described in the CONTRACT DOCUMENTS for the following unit price or lump sum:



# BID FORM

Item No.	Description	Unit	Quantity	Total Price
1	<p>Remove existing AHU-6 and install new air handling units as scheduled on drawings.</p> <p>A. Provide new automatic control valves and new chilled water piping as required. Provide required modifications to existing ductwork to accommodate new air handling unit. See drawings and specifications for additional information and requirements.</p> <p>B. Provide Staefa control system for new air handling unit and connect to existing air handling unit controls that serves AHU-6. See specifications for additional information and requirements.</p>	LS	1	
<b>TOTAL BID PRICE</b>				

TOTAL BID PRICE, IN WORDS:

\_\_\_\_\_ DOLLARS AND \_\_\_\_\_ CENTS (\$\_\_\_\_\_.)

Submitted By:

\_\_\_\_\_  
(Name of Bidder)

By: \_\_\_\_\_

Title: \_\_\_\_\_

Address: \_\_\_\_\_

Telephone No.: \_\_\_\_\_

Fax No.: \_\_\_\_\_

\_\_\_\_\_  
License Number

\_\_\_\_\_  
Date of Expiration of License

\_\_\_\_\_  
License Type

\_\_\_\_\_  
Monetary Limit

## ADDENDA ACKNOWLEDGEMENT FORM

BIDDER acknowledges receipt of the following addenda (as applicable):

Addendum No. 1 \_\_\_\_\_ Dated \_\_\_\_\_

Addendum No. 2 \_\_\_\_\_ Dated \_\_\_\_\_

Addendum No. 3 \_\_\_\_\_ Dated \_\_\_\_\_

Addendum No. 4 \_\_\_\_\_ Dated \_\_\_\_\_

Addendum No. 5 \_\_\_\_\_ Dated \_\_\_\_\_

Addendum No. 6 \_\_\_\_\_ Dated \_\_\_\_\_

\_\_\_\_\_  
(Name of Bidder)

By: \_\_\_\_\_

Title: \_\_\_\_\_

Use this form for bid bond.

## BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned, \_\_\_\_\_ (BIDDER) and \_\_\_\_\_ (SURETY) are held and firmly bound unto the City of Germantown, Tennessee in the penal sum of five percent (5%) of the total amount of the BID, for the payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors and assigns, firmly by these presents.

The conditions of the above obligation are such that whereas BIDDER has submitted to the CITY OF GERMANTOWN a certain BID, attached hereto and hereby made a part hereof, to execute and enter into a certain CONTRACT AND AGREEMENT (C & A) **for Air Handling Unit Replacement** (PROJECT) in compliance with the CONTRACT DOCUMENTS.

NOW, THEREFORE,

- (a) If the BID shall be rejected, or
- (b) If the BID is accepted and the BIDDER enters into a C & A for said project with the CITY OF GERMANTOWN within fifteen (15) days after receipt of the NOTICE OF AWARD accompanied by the C & A and all required attachments, then, this obligation shall be null and void; otherwise the same shall remain in full force and effect; it being expressly understood and agreed that the liability of the SURETY for any and all claims hereunder shall, in no event, exceed the penal sum of this obligation as herein stated but the liability of the BIDDER is not so limited.

The SURETY, for value received, hereby stipulates and agrees that the obligation of said SURETY on this, its BID BOND, shall in no way be impaired or released by any extension of the time within which the CITY OF GERMANTOWN may accept such BID and the SURETY does hereby waive notice of any such extension.

WITNESS THE DUE EXECUTION HEREOF, on the \_\_\_\_\_ day of \_\_\_\_\_, 2012.

NAME OF BIDDER

\_\_\_\_\_

BY: \_\_\_\_\_

Signature of BIDDER or Authorized Officer

Title: \_\_\_\_\_

NAME OF SURETY

\_\_\_\_\_

BY: \_\_\_\_\_

Authorized Representative  
(Attach Power of Attorney)

## **INFORMATION FOR SUCCESSFUL BIDDER**

Those proposing to bid on the construction and completion of this City Project (PROJECT) should note the following:

- (1) The City of Germantown (the “City”) may award the contract to the lowest responsible and best bidder in accordance with the CONTRACT DOCUMENTS and in accordance with the following provisions:
  - a. The City may conduct such investigations as it deems necessary to evaluate any bid and to conclude, if warranted, that the BIDDER or, if an entity, its owners and officers, and the BIDDER’S proposed subcontractors, are responsible, qualified, and competent and have the financial ability to do the work in accordance with the contract documents to the City’s satisfaction within the prescribed time.
  - b. The City reserves the right to reject the bid of any BIDDER who does not satisfy such evaluation.
  - c. The City reserves the right to reject any BID if any of the unit prices contained therein are obviously unbalanced, either above or below the reasonable cost thereof, as analyzed by the City. The purpose of insisting on balanced unit prices is to prevent the City from paying excessive unit prices, even though the bid, as a whole, is the lowest bid.
  - d. The City reserves the right to: reject any and all bids; waive any and all informalities; and discard all nonconforming and non-responsive or conditional bids.
  - e. In evaluating bids, the City shall consider the qualifications of the bidders, the degree of compliance with the prescribed requirements, and the alternatives and unit prices (if requested in the bid forms).
  - f. If awarded, the contract will be awarded to the lowest bidder whose evaluation by the City indicates to the City that the award will be in the best interest of the Project.
  - g. The City may reject all bids submitted and call for new bids.
- (2) The City will notify the successful BIDDER that it is the successful BIDDER by sending the NOTICE OF AWARD. Accompanying the NOTICE OF AWARD will be the CONTRACT AND AGREEMENT (C & A), the PAYMENT AND PERFORMANCE BONDS and information regarding the City’s insurance requirement. The CONTRACTOR is required to return same to the City, properly executed, within fifteen (15) days of receipt.

- (3) The CONTRACTOR is required to sign the C & A as set out therein. The CONTRACTOR is required to sign the PAYMENT AND PERFORMANCE BONDS exactly as set out therein, have an authorized agent of an insurance company authorized to do business in the State of Tennessee sign same and attach his Power of Attorney. Said PAYMENT AND PERFORMANCE BONDS must be attached to the C & A. The CONTRACTOR is required to have an authorized agent of an insurance company or companies authorized to do business in the State of Tennessee sign the CERTIFICATE OF INSURANCE COVERAGE and attach his or their Power(s) of Attorney to it. The CERTIFICATE OF INSURANCE COVERAGE must be attached to the C & A.
- (4) The CONTRACTOR shall be notified by the City when said C & A, with the required attachments, has been approved. The City will thereafter issue a writing to the Contractor notifying the CONTRACTOR to commence work under the C & A (the "Notice to Proceed"). When such occurs, the CONTRACTOR is required to commence work on the PROJECT as specified therein and complete construction of the PROJECT within the number of consecutive calendar days set out in the CONTRACT DOCUMENTS.
- (5) If the CONTRACTOR fails to comply with the foregoing, he shall become liable to the City for any damages suffered by the City because of such failure and/or may lose any benefits obtained by receiving the NOTICE OF AWARD.
- (6) Further, the CONTRACTOR, by submitting his BID, agrees that he has read and is familiar with all the terms and conditions of the documents making up the CONTRACT DOCUMENTS and will abide by the terms and conditions thereof.
- (7) The C & A and the other CONTRACT DOCUMENTS will be interpreted in accordance with and controlled by the laws of the State of Tennessee.
- (8) The original of the C & A shall remain on file at the Office of the City Clerk, 1930 South Germantown Road, Germantown, Tennessee 38138. Drawings and Specifications shall remain on file at the office set out in the CONTRACT DOCUMENTS.

**CONTRACT AND AGREEMENT BY AND BETWEEN  
THE CITY OF GERMANTOWN, TENNESSEE  
AND  
AIR HANDLING UNIT REPLACEMENT**

This CONTRACT AND AGREEMENT (sometimes "C & A") is entered into this \_\_\_\_ day of September, 2012, by and between the CITY OF GERMANTOWN, TENNESSEE, a municipality organized and existing under the laws of the State of Tennessee ("CITY" OR "OWNER"), and , a \_\_\_\_\_ [*State Where Contractor Established*] \_\_\_\_\_ [*type of entity, e.g., corporation, LLC, partnership*] ("CONTRACTOR"). For and in consideration of the agreements, covenants, payments and promises herein, the CITY and CONTRACTOR contract, covenant and agree as follows:

## **ARTICLE I**

One (1) set of complete Contract Documents is on file in the office of the City Clerk. The parties expressly agree that the following documents are a part of this C & A:

Advertisement for Bids	A
Special Notice	B
Information for Bidders	C-1 thru C-6
Drug & Alcohol Policy	D-1 thru D-3
Title VI Form	E-1 thru E-2
Bid Form	F-1 thru F-2
Addenda Acknowledgment Form	F (A-1)
Bid Bond	G
Information for Successful Bidder	H-1 & H-2
Contract and Agreement	I-1 thru I-9
Payment Bond	J-1 thru J-3
Performance Bond	K-1 thru K-3
Germantown Insurance Requirement	L-1 thru L-4
Affidavit of Contractor	M-1 thru M-2
Waiver and Release of Lien	N
Certificate of Payment to Contractor	O-1 & O-2
Notice of Award	P
Notice to Proceed	Q
General Provisions	GP-1 thru GP-22
Special Conditions	SC-1 thru SC-10

### **TECHNICAL SPECIFICATIONS**

Mechanical – General	15000
Basic Piping	15100
Valves	15120
Piping Specialties	15130
Mechanical Identification	15230
Mechanical Systems Insulation	15250
Testing, Balancing and Adjusting	15270A
HVAC Controls	15530
HVAC Equipment	15600
Hydronic Piping	15710
HVAC Sheet Metal	15800

### **CONSTRUCTION DRAWINGS**

Partial Floor Plan – HVAC Demolition & HVAC New	M1
Details	M2

## **ARTICLE II**

CONTRACTOR agrees to furnish and pay for all material, supplies, tools, equipment, labor and other services required to do and perform all the work required to complete the Project as described in the Contract Documents within Thirty (30) consecutive calendar days after the day specified in the Notice to Proceed (**FORM Q**) as the last day upon which the Contractor is to proceed, all in strict and complete compliance with the terms and conditions of this C & A and with the other Contract Documents for this Project, all of which shall be deemed a part hereof as fully and completely as if set out and copied verbatim herein. The CITY agrees to pay the CONTRACTOR for said work described in Article II as shown on the BID FORM and pursuant to the terms and conditions of this C & A and the other Contract Documents.

No payments under this C & A will be made except upon presentation of the monthly estimate form prepared by CONTRACTOR and approved by the CITY, which shall show that the work covered by the periodic Certificate of Payment Form has been done and the payments therefor are due in accordance with this C & A.

The first estimate shall be of the value of the work completed within the first thirty days from the commencement of performance by the CONTRACTOR pursuant to this C & A. Every subsequent monthly estimate shall be for the work done since the CONTRACTOR's commencement of performance of this C & A, less the amount previously paid. If the CONTRACTOR fails to adhere to the program of completion provided for in the Contract Documents, the CITY shall deduct from the next and all subsequent estimates the full calculated accruing amount of the liquidated damages (if any) to the date of said estimate until such time as



compliance with the program has been restored.

The monthly estimates shall be submitted on a form acceptable to the OWNER signed by the City Engineer, architect or other professional retained by the OWNER relative to the Project, if any. Such estimates shall be subject to the approval of the OWNER. If the OWNER approves such estimates, the OWNER, subject to the foregoing provisions, will pay or cause to be paid to the CONTRACTOR, in the manner provided by law, the amount equal to NINETY-FIVE PERCENT (95%) of the estimated value of the work performed.

The CONTRACTOR shall, as soon as practical after final acceptance of the work under the C & A, make a final estimate of the amount of work done hereunder and the value thereof. Such final estimate shall be checked, approved and signed by the engineer/architect retained by the OWNER relative to the Project, if any, and the official representative of the OWNER. After such approval, the OWNER shall pay, or cause to be paid, the CONTRACTOR, in the manner provided by law, the entire sum so found to be due hereunder after deducting there from all previous payments and such other lawful amounts as the terms of this C & A prescribe. Neither the final payment nor any part of the retained percentage shall become due until the CONTRACTOR shall deliver to the OWNER a complete release of all claims or liens arising out of this C & A with an affidavit that all material suppliers and laborers to or on the Project have been paid. The CONTRACTOR may furnish a bond satisfactory to the OWNER to indemnify the OWNER against any claim or lien if a subcontractor refuses to furnish a release or receipt in full. If any claim or lien remains unsatisfied after all payments are made, the CONTRACTOR shall refund to the OWNER all monies that the latter may be compelled to pay in discharging

such a lien, including all costs and reasonable attorneys fees incurred by the OWNER in defending against such claim or lien. In no case will final payment be made in less than thirty-five (35) days after completion of the work and the acceptance of same by the OWNER. Nothing contained herein shall be construed as signifying that a materialman or laborer has a right to a lien on the Project, as such liens are not permitted by Tennessee law. Any party giving notice to the OWNER that such party has not been paid by the CONTRACTOR shall be referred by the OWNER to the CONTRACTOR and the surety on the bonds required to be posted by the CONTRACTOR relative to the Project.

### **ARTICLE III**

CONTRACTOR declares that neither the Mayor, nor any Aldermen, nor any other CITY official holds a direct or indirect interest in this C & A. CONTRACTOR pledges that he will notify the Finance Director of the CITY in writing should any CITY official become either directly or indirectly interested in this C & A. CONTRACTOR declares that as of the date of this declaration he has not given or donated or promised to give or donate, either directly or indirectly, to any official or employee of the CITY, or to pay anyone else for the benefit of any official or employee of the CITY, any sum of money or other thing of value for aid or assistance in obtaining this C & A. CONTRACTOR further pledges that neither he nor any other officer or employee of CONTRACTOR will give or donate or promise to give or donate, directly or indirectly, to any official or employee of the CITY or anyone else for the benefit thereof any sum of money or other thing of value for aid or assistance in obtaining any change order to this C & A.

#### **ARTICLE IV**

CONTRACTOR agrees to indemnify and save the CITY, CITY officers, CITY agents, and CITY employees harmless from and against all loss and expense, including court costs and attorneys' fees, by reason of liability imposed on the CITY, CITY officers, CITY agents, or CITY employees, for damage because of bodily injury, death or property damage arising out of or in consequence of the performance of the work under or in any manner related to this C & A, whenever such injury, death or damage is due or claimed to be due to the negligence of the CONTRACTOR, his subcontractors, officers, agents, and/or employees.

In the event the CITY shall have occasion to either defend or assert its rights under this C & A in a court of law or equity, before a board of arbitration or otherwise, and if the CITY shall prevail in any such action, either as defendant or plaintiff (as the case may be), CONTRACTOR shall pay any and all costs of such action, including court costs and reasonable attorneys' fees, incurred by the CITY in asserting or defending its rights under this C & A.

All personal pronouns used in the Contract Documents, whether used in the masculine, feminine or neuter gender, shall include all other genders, the singular shall include the plural, and vice versa, as the context may require.

WITNESS the due execution hereof, effective \_\_\_\_\_, 2012 which date is the date of the signature of the Mayor as attested to by the City Clerk/Recorder under seal of office.

\_\_\_\_\_  
**[CONTRACTOR NAME]**

By: \_\_\_\_\_

Title: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Telephone No.: (\_\_\_\_) \_\_\_\_\_

Fax No.: (\_\_\_\_) \_\_\_\_\_

**CITY OF GERMANTOWN, TENNESSEE**

By: \_\_\_\_\_

Sharon Goldsworthy, Mayor

I certify that on the \_\_\_\_ day of \_\_\_\_\_, 2012, the signature of the Mayor was attested to by the City Clerk under seal of office on the original of this CONTRACT AND AGREEMENT.

\_\_\_\_\_  
City Clerk/Recorder

Date: \_\_\_\_\_

Approved as to form and content:

\_\_\_\_\_  
City Attorney

Date: \_\_\_\_\_

## PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS, that

\_\_\_\_\_  
(Name of Contractor)

\_\_\_\_\_  
(Address of Contractor) a

\_\_\_\_\_  
(State of formation of CONTRACTOR)

\_\_\_\_\_  
(Corporation, Partnership, Limited Liability

Company, Individual or Joint Venture—indicate which), hereinafter called CONTRACTOR,

and \_\_\_\_\_  
(Name of Surety)

\_\_\_\_\_  
(Address of Surety)

hereinafter called SURETY, are held and firmly bound unto the City of Germantown, Tennessee,

1930 South Germantown Road, Germantown, Tennessee, hereinafter called OWNER, in the

penal sum of

\_\_\_\_\_ Dollars

(\$\_\_\_\_\_), in lawful money of the United States, for the payment of which sum

well and truly to be made, we bind ourselves, and our successors, and assigns, jointly and

severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that whereas, the CONTRACTOR has entered into a certain Contract and Agreement (“Contract”) with the OWNER which is made a part hereof by reference for the construction of:

Air Handling Unit Replacement

\_\_\_\_\_

\_\_\_\_\_

NOW, THEREFORE, if the CONTRACTOR shall promptly make payment to all persons, firms, and SUBCONTRACTORS furnishing materials for or performing labor in the prosecution of the work provided for in such Contract, and any extension or modification thereof, including all amounts for materials, lubricants, oil, gasoline, parts and repairs on machinery, equipment, and tools consumed or used in connection with such work, and all insurance premiums on said work, and for all labor performed in such work, whether by SUBCONTRACTORS or otherwise, then this obligation shall be void; otherwise, same is to remain in full force and effect.

PROVIDED, FURTHER, that said SURETY, for value received, hereby stipulates and agrees that no change, extension of time, modification, alteration, or addition to the terms of the Contract, to the work to be performed thereunder or to the SPECIFICATIONS accompanying the same shall in any way release its obligation under this BOND. Said SURETY hereby waives notice of any such change, extension of time, modification, alteration, or addition to the terms of the work or to the SPECIFICATIONS.

PROVIDED, FURTHER, that no final settlement between the OWNER and the CONTRACTOR shall abridge the right of any beneficiary hereunder, whose claim is entitled to be satisfied by the CONTRACTOR and its SURETY.

PROVIDED, FURTHER, that the CONTRACTOR and SURETY agree that any claim under this BOND may only be litigated in a court of competent jurisdiction in Shelby County, Tennessee.

IN WITNESS WHEREOF, this instrument is duly executed, this the \_\_\_\_\_ day of \_\_\_\_\_, 2012.

\_\_\_\_\_  
(*CONTRACTOR*)

By: \_\_\_\_\_

Title: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_  
(*SURETY*)

By: \_\_\_\_\_

(*Attorney-in-Fact*)

Title: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_



## PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS, that

\_\_\_\_\_*(Name of Contractor)*

\_\_\_\_\_*(Address of Contractor)* a

\_\_\_\_\_*(State of formation of CONTRACTOR)*

\_\_\_\_\_*(Corporation, Partnership, Limited Liability*

*Company, Individual or Joint Venture—indicate which)*, hereinafter called CONTRACTOR,

and \_\_\_\_\_*(Name of Surety)*

\_\_\_\_\_*(Address of Surety)*

hereinafter called SURETY, are held and firmly bound unto

the City of Germantown, Tennessee, 1930 South Germantown Road, Germantown, Tennessee,

hereinafter called OWNER, in the penal sum  
of \_\_\_\_\_Dollars

(\$ \_\_\_\_\_), in lawful money of the United States, for the payment of which sum  
well and truly to be made, we bind ourselves, and our successors, and assigns, jointly and  
severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that, whereas, the CONTRACTOR  
has entered into a certain Contract and Agreement (“Contract”) with the OWNER, which is  
made a part hereof by reference, for the construction of:

Air Handling Unit Replacement

\_\_\_\_\_, and if

the CONTRACTOR shall satisfy all claims and demands incurred under such Contract, and shall

fully indemnify and save harmless the OWNER from all costs and damages which it may suffer by reason of failure to do so, and shall reimburse and repay the OWNER all outlay and expense which the OWNER may incur in making good any default, then this obligation shall be void; otherwise, same is to remain in full force and effect.

PROVIDED, FURTHER, that the said SURETY, for value received hereby, stipulates and agrees that no change, extension of time, modification, alteration, or addition to the terms of the Contract or to the work to be performed thereunder or the SPECIFICATIONS accompanying the same shall in any way release its obligation on this BOND, and it does hereby waive notice of any such change, extension of time, modification, alteration, or addition to the terms of the Contract, to the work, or to the SPECIFICATIONS.

PROVIDED, FURTHER, that no final settlement between the OWNER and the CONTRACTOR shall abridge the right of any beneficiary hereunder whose claim may be unsatisfied and which is entitled to be satisfied by the CONTRACTOR and SURETY.

PROVIDED, FURTHER, that the CONTRACTOR and SURETY agree that any claim under this BOND may only be litigated in a court of competent jurisdiction in Shelby County, Tennessee.

IN WITNESS WHEREOF, this instrument is duly executed this the \_\_\_\_\_ day of \_\_\_\_\_, 2012.

\_\_\_\_\_  
(*CONTRACTOR*)

By: \_\_\_\_\_

Title: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_  
(*SURETY*)

By: \_\_\_\_\_

(*Attorney-in-Fact*)

Title: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

## **GERMANTOWN INSURANCE REQUIREMENT CITY PROJECT CONTRACT**

The CONTRACTOR shall purchase and maintain such comprehensive general liability and other insurance as will provide protection from claims set forth below which may arise out of or result from the CONTRACTOR'S performance of the work and the CONTRACTOR'S other obligations under the Contract Documents, whether such performance is by the CONTRACTOR, by any Subcontractor, by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

1. Claims under workers' or workmen's compensation, disability benefits and other similar employee benefit acts;
2. Claims for damages because of bodily injury, occupational sickness or disease, or death of the CONTRACTOR'S employees;
3. Claims for damages because of bodily injury, sickness or disease, or death of any person other than the CONTRACTOR'S employees;
4. Claims for damages which may be insured by personal injury liability coverage which are sustained (i) by any person as a result of an offense directly or indirectly related to the employment of such person by the CONTRACTOR, or (ii) by any other person for any other reason;
5. Claims for damages, other than to the work itself, because of injury to or destruction of tangible property, including loss of use resulting there from;
6. Claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle; and
7. Claims by third parties for bodily injury and property damage arising or resulting from the CONTRACTOR's failure to comply with any obligation undertaken by him pursuant to the Contract Documents.

The automobile general liability insurance required by this Contract shall include the specific coverage's and be written for not less than \$500,000 bodily injury and \$100,000 property damage.

The comprehensive general liability insurance required by this Contract shall include the specific coverage's and shall be written for not less than \$1 million combined per occurrence limit or \$3 million aggregate limit with the entire aggregate limits dedicated to this particular job.

The CONTRACTOR shall have and maintain during the life of the Contract and Agreement such Property Insurance upon his entire work at the site to the full insurable value thereof. This insurance shall protect the City of Germantown, as its interest may appear in the work, and shall

insure against the perils of fire and extended coverage and shall include “all risk” insurance for the physical loss or damage including, without duplication of coverage, theft, vandalism and malicious mischief.

All such insurance shall be set out on the Certificate of Insurance (form included for both occurrence and aggregate policy) executed by an insurance company or insurance companies authorized to do business in the State of Tennessee. The Certificate of Insurance shall contain the following provision:

“Should any of the described policies on the attached Certificate of Insurance be cancelled, non-renewed or reduced in coverage – the issuing insurance company will mail 30 days prior written notice to: **The City of Germantown, Risk Management Department, P.O. Box 38809 Germantown, TN 38138-0809**, by registered mail, return receipt request.”

All such insurance shall remain in effect until final acceptance and at all times thereafter when the CONTRACTOR may be correcting, removing or replacing defective work in accordance with the Contract and Agreement.

The comprehensive general liability insurance required by this section will include contractual liability insurance applicable to the CONTRACTOR’S obligations under the Contract and Agreement.



CERTIFICATE OF INSURANCE						
PRODUCER			DATE 8/30/2004			
Agency			THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.			
Address						
City	State	Zip				
INSURED			COMPANIES AFFORDING COVERAGE			
Insured			COMPANY LETTER	A Company		
Address			COMPANY LETTER	B		
City			COMPANY LETTER	C		
COVERAGES						
THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED, NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN.						
THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.						
CO LT#	TYPE OF INSURANCE		POLICY NUMBER	POLICY PERIOD	LIMITS	
A	GENERAL LIABILITY					
	<input checked="" type="checkbox"/>	COMMERCIAL GENERAL LIABILITY	Policy #	Date Date	GENERAL AGGREGATE	\$ 1,000,000
	<input type="checkbox"/>	CLAIMS MADE			PRODUCTS/COMPLETED OPER. AGGR.	\$ 1,000,000
	<input type="checkbox"/>	PERSONAL INJURY LIABILITY			PERSONAL & ADVERTISING INJURY	\$ 1,000,000
	<input type="checkbox"/>				EACH OCCURRENCE	\$ 1,000,000
	<input type="checkbox"/>				DAMAGE TO RENTED PREMISES	\$ 50,000
	<input type="checkbox"/>			MEDICAL EXPENSE (ANY ONE PERSON)	\$ 5,000	
					PER OCCURRENCE	
A	AUTOMOBILE LIABILITY				TORT	
	<input checked="" type="checkbox"/>	OWNED AUTOS	Policy #	Date Date	COMBINED SINGLE LIMIT	\$ 1,000,000
	<input checked="" type="checkbox"/>	HIRED AUTOS				
	<input checked="" type="checkbox"/>	NON-OWNED AUTOS				
	<input type="checkbox"/>	PHYSICAL DAMAGE				
A	WORKERS COMPENSATION AND EMPLOYERS LIABILITY				WC STATUTORY LIMITS	
			Policy #	Date Date	EL-EACH ACCIDENT	\$ 100,000
					EL-DISEASE-POLICY LIMIT	\$ 500,000
					EL-DISEASE EACH EMPLOYEE	\$ 100,000
A	Umbrella					
			Policy #	Date Date	LIABILITY LIMIT EACH OCCURRENCE	\$ 2,000,000
					LIABILITY AGGREGATE LIMIT	\$ 2,000,000
					REATTAINED LIMIT	\$ 10,000
	<input type="checkbox"/>	SPECIAL				
	<input type="checkbox"/>	EARTHQUAKE				
	<input type="checkbox"/>	FLOOD				
A	BUILDERS RISK					
	<input type="checkbox"/>	PER PROJECT			LIMIT PER LOCATION	
	<input type="checkbox"/>					
	<input type="checkbox"/>					
	<input type="checkbox"/>					
OTHER						
LOCATION OF PREMISES/DESCRIPTION OF PROPERTY/DESCRIPTION OF OPERATIONS/DESCRIPTION OF VEHICLES/SPECIAL ITEMS						
City of Germantown Named as Additional Insured per Endorsement 2010 (11/85)						
CERTIFICATE HOLDER				CANCELLATION		
City of Germantown C/O Risk Manager 1930 Germantown Road S Germantown, Tn. 38138				SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING COMPANY WILL MAIL 30 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT,		
				AUTHORIZED REPRESENTATIVE		
				Producer		

**CITY OF GERMANTOWN**  
**Certificate of Insurance Attachment**

Named Insured: \_\_\_\_\_

Project: Air Handling Unit Replacement

This is to certify that insurance policies listed on the attached certificate of insurance contain the following:

1. General Liability Insurance Includes:
  - Premises/Operations
  - Products/Completed Operations
  - Broad Form Property Damage
  - Blanket Contractual Coverage
  - X (Explosion), C (Collapse) and U (Underground) Coverage
  - Independent Contractors
2. The City of Germantown is named as an Additional Insured on the General Liability, using a CG 2010 (11/85) endorsement, for the referenced project and the City of Germantown is named additional insured on the Business Auto Coverage.
3. Insured agrees to “Waive its Right of Subrogation” against the City of Germantown relative to Workers Compensation, General Liability, and Auto.
4. Cancellation Clause is amended to read: Should any of the described policies on the attached Certificate of Insurance be cancelled, non-renewed or reduced in coverage – the issuing insurance company will mail 30 days prior written notice to: **The City of Germantown, Risk Management Department, P.O. Box 38809 Germantown, TN 38138-0809**, by registered mail, return receipt request.

Agency or Company: \_\_\_\_\_

Authorized Agency Representative: \_\_\_\_\_  
(Signature)

Date Issued: \_\_\_\_\_

## AFFIDAVIT OF CONTRACTOR

STATE OF )  
 ) SS:  
COUNTY OF )

\_\_\_\_\_, being duly sworn according  
(Name of Affiant)  
to law, deposes and says that he is the \_\_\_\_\_  
(Title)  
of \_\_\_\_\_, the CONTRACTOR,  
(Name of Contractor)  
in a Contract and Agreement entered into between the Contractor and  
\_\_\_\_\_ the City of Germantown \_\_\_\_\_, the Owner,

for the construction of Air Handling Unit Replacement (the "Project"),

and that he is authorized to and does make this affidavit on behalf of said CONTRACTOR in order to induce the OWNER to make payment to the CONTRACTOR, in accordance with the provisions of the said Contract and Agreement.

Affiant further says that all persons who have furnished materials and/or labor in connection with the construction of the Project have been paid in full; that the names of all materialmen and subcontractors that furnished any material and/or services in connection with such construction and the kind or kinds of material and/or services so furnished are as listed hereinafter; and that the CONTRACTOR has delivered to the OWNER waivers and releases of liens executed by all such materialmen and subcontractors.

Sworn to and subscribed  
before me this \_\_\_\_\_ day  
of \_\_\_\_\_, 2012.

\_\_\_\_\_  
(Signature of Affiant)

My Commission Expires:

\_\_\_\_\_  
Notary Public

\_\_\_\_\_



**NAME**

**KIND OF MATERIAL AND/OR SERVICE**


## WAIVER AND RELEASE OF LIEN

WHEREAS, the undersigned, \_\_\_\_\_,  
(Name of manufacturer, materialman, or subcontractor)

has furnished to \_\_\_\_\_ labor and/or material for  
(Name of Contractor)

use in the construction of Air Handling Unit Replacement (the "Project")

belonging to the City of Germantown,

NOW THEREFORE, the undersigned, \_\_\_\_\_, for and in consideration of One Dollar (\$1.00) and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, does hereby waive and release any and all liens, or right to claim a lien, on the above described Project and premises or right to claim under any bond furnished by the CONTRACTOR relative to the Project and/or under any law, common or statutory, on account of labor or materials, or both, heretofore or hereafter furnished by the undersigned to or for the account of

said \_\_\_\_\_ for said Project.  
(Name of Contractor)

Given under my (our) hand(s) and seal this \_\_\_\_ day of \_\_\_\_\_, 2012.

Manufacturer, Materialman or Subcontractor Name:

By: \_\_\_\_\_

STATE \_\_\_\_\_

COUNTY \_\_\_\_\_

I, \_\_\_\_\_, a Notary Public, in and for said State and County, hereby  
certify that \_\_\_\_\_ who is \_\_\_\_\_  
(Name of Individual) (Title)

\_\_\_\_\_ of \_\_\_\_\_  
(Title or Office) (Name of materialman or subcontractor or furnisher)

and whose name is signed to the foregoing, and who is known to me, acknowledged before me on this day that he, with full authority, executed the foregoing instrument voluntarily for and as the act of said

\_\_\_\_\_.  
(Name of materialman or subcontractor or furnisher)

Given under my hand and seal this \_\_\_\_ day of \_\_\_\_\_, 2012.

\_\_\_\_\_  
Notary Public

My Commission Expires:

\_\_\_\_\_

CITY OF GERMANTOWN  
1930 SOUTH GERMANTOWN ROAD  
GERMANTOWN, TENNESSEE 38138

**CERTIFICATE OF PAYMENT TO CONTRACTOR**

CONTRACTOR: \_\_\_\_\_ Contract \_\_\_\_\_  
\_\_\_\_\_ Estimate No. \_\_\_\_\_  
\_\_\_\_\_ Date \_\_\_\_\_

The undersigned CONTRACTOR hereby swears under penalty of perjury that (1) this application for payment is a true and correct estimate of the work done and material incorporated to date, and (2) all materials and equipment incorporated in the said project and covered by this application for payment are free and clear of all liens, claims, security interests and encumbrances. In addition, the contractor certifies that he has complied with the Department of Labor, Safety, and Health Regulations for construction promulgated under the Occupational Safety and Health Act of 1970.

\_\_\_\_\_  
The status of this contract is as follows:

ORIGINAL CONTRACT PRICE \$ \_\_\_\_\_

Amendments Approved in Previous Months:

No. 1 Approved	20 ____ (Adds ____ days)	\$ _____
No. 2 Approved	20 ____ (Adds ____ days)	\$ _____
No. 3 Approved	20 ____ (Adds ____ days)	\$ _____
No. 4 Approved	20 ____ (Adds ____ days)	\$ _____
No. 5 Approved	20 ____ (Adds ____ days)	\$ _____
No. 6 Approved	20 ____ (Adds ____ days)	\$ _____

Total of Amendments (Adds \_\_\_\_ days) \$ \_\_\_\_\_

Work Order Date _____	TOTAL AMENDMENT CONTRACT PRICE	\$ _____
Original Completion Date _____	Less - Unused Balance	_____
Authorized Time Extens. _____	Balance	\$ _____
Amended Completion Date _____	Total Earned to Date	\$ _____
Remarks _____	Less - Retainage @ 5%	_____
_____	Total Due this date	\$ _____
_____	Less - Previously Certified	_____
_____	Amount Payable	\$ _____

\_\_\_\_\_  
CONTRACTOR

\_\_\_\_\_  
Having reviewed the attached Application for Payment and the project status, the undersigned do, within the limits of authority granted by the contract documents, approve the payment of the sum designated net total payable.

Dated: \_\_\_\_\_, 2012

\_\_\_\_\_  
ENGINEER OR ARCHITECT

Dated: \_\_\_\_\_, 2012

\_\_\_\_\_  
OWNER'S REPRESENTATIVE

MONTHLY CONSTRUCTION ESTIMATE

PROJECT AIR HANDLING UNIT REPLACEMENT JOB NO. \_\_\_\_\_ESTIMATE NO. \_\_\_\_\_

ITEM NO.	DESCRIPTION	VALUE OF ITEM AS REFLECTED IN BID	NO. OF UNITS	UNIT PRICE	AMENDED CONTRACT PRICE	QUANTITY THIS ESTIMATE	INSTALLED TO DATE	AMOUNT EARNED TO DATE	<u>MATERIALS:</u>		BALANCE OR OVERRUN (-)	RETAINAGE
									STORED	COMPLETED		

TOTALS\_\_\_\_\_



# CITY OF GERMANTOWN TENNESSEE

1930 South Germantown Road • Germantown, Tennessee 38138-2815  
Phone (901) 757-7200 Fax (901) 757-7292 www.germantown-tn.gov

## **NOTICE OF AWARD**

September 24, 2012

TO:

CONTRACT: Air handling Unit Replacement

Dear :

This is to inform you that by action of the Board of Mayor and Aldermen during their meeting on September 24, 2012, your firm was awarded the contract for Air handling Unit Replacement.

Enclosed you will find three (3) copies of the Contract and Agreement, and the Performance and Payment Bonds for you to execute as set forth on Pages "H-1 and H-2" of INFORMATION FOR SUCCESSFUL BIDDER, of the SPECIFICATION BOOKLET. Further, you should have your insurance agent execute the insurance certificate exactly as it is found in the Germantown Insurance Requirements.

Also, enclosed are the Code of Ethical Conduct and Vision 2020 Strategic Plan for the City for your review. The Organizational Profile for Corporate Sustainability Form is also included and should be returned with above documents.

Congratulations on being the successful bidder for this project.

Sincerely,  
Lisa A. Piefer  
Purchasing Officer

Enclosure

cc: Risk Manager of the City

## **NOTICE TO PROCEED**

To: \_\_\_\_\_  
(Contractor)

Date: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Project: Air Handling Unit Replacement

\_\_\_\_\_  
\_\_\_\_\_

Relative to the above referenced project, this is your official Notice to Proceed within Thirty (30) consecutive calendar days of the date hereof and to complete the work within the time specified in the Contract and Agreement entered into by you and the City.

CITY OF GERMANTOWN

By: \_\_\_\_\_

Title: \_\_\_\_\_

### ACCEPTANCE OF NOTICE TO PROCEED

Receipt of the above NOTICE TO PROCEED

is hereby acknowledged by \_\_\_\_\_  
(Typed or Printed Name of Contractor)

this the \_\_\_\_ day of \_\_\_\_\_ 2012.

By: \_\_\_\_\_

Title: \_\_\_\_\_

**NOTE: The Contractor must promptly sign and return to the City of Germantown a copy of this Notice to Proceed.**

## **GENERAL PROVISIONS**

### **1. DEFINITIONS:**

- A. The word “OWNER” means the City of Germantown.
- B. The word “ENGINEER” means the City Engineer, Consultant Engineer or Architect of Germantown.
- C. The word “INSPECTOR” means a City of Germantown inspector.
- D. The word “CONTRACTOR” means the successful BIDDER and/or assigned representative to whom the contract is awarded.
- E. The words “install”, “furnish”, “provide”, or words of like import mean the CONTRACTOR shall install, furnish, or provide, and similarly, the words “approved”, “authorized”, “required”, “satisfactory”, “acceptable”, or words of like import mean approved by, authorized by, required by, satisfactory to, or acceptable to the ENGINEER, unless otherwise expressly stated.
- F. The words “indicated”, “shown”, “detailed”, or “scheduled” mean indicated, shown, detailed, or scheduled on the contract drawings, unless otherwise expressly stated.
- G. The word “work” means the labor, materials, equipment, supplies, and services to be furnished under the contract, and the performing of all duties and obligations required by the contract documents.
- H. The word “submit” means the CONTRACTOR shall submit to the ENGINEER for approval, unless otherwise expressly stated.
- I. The word “Provide” means the CONTRACTOR shall furnish and install, complete and ready for use, unless otherwise expressly stated.
- J. The word “selected” means selected by the ENGINEER, unless otherwise expressly stated.

### **2. ENGINEER’S DECISION:**

The ENGINEER shall in all cases determine the amount, quality, acceptability, and fitness of the several kinds of finished work and materials which are to be paid for hereunder, and shall decide all questions which may arise as to fulfillment of this contract on the part of the CONTRACTOR, and the ENGINEER’S interpretation of the contract and the ENGINEER’S determination and decision thereto shall be final and conclusive. Such determinations and decisions, in case any question arises, shall be a condition precedent to the CONTRACTOR’S right to receive any money hereunder. The ENGINEER shall have the right to correct all clerical, mathematical, or minor errors or

omissions in the specifications when such corrections are necessary for the proper coordination of the contract documents.

**3. INSPECTOR'S RESPONSIBILITY:**

The INSPECTOR will visit the job periodically to see that the terms of the plans and specifications are being performed in general accordance with the Contract Documents. Should the INSPECTOR be needed by the CONTRACTOR or his representative, these individuals may call the CITY OF GERMANTOWN DEPARTMENT OF COMMUNITY DEVELOPMENT to arrange a time that the INSPECTOR will confer with the CONTRACTOR about any aspect of the job, but the INSPECTOR will not give instructions to the CONTRACTOR. The CONTRACTOR will be responsible for compliance with the plans and specifications and all requirements of the Contract. The INSPECTOR may advise the CONTRACTOR or his representative that changes in the work should be accomplished. The INSPECTOR, acting through the authority of the Engineer, can reject work which clearly does not meet the requirements of the City.

**4. CONTRACTOR'S RESPONSIBILITY:**

- A. From commencement until completion and final acceptance by the OWNER, the work under this Contract shall be under the charge and control of the CONTRACTOR. During such period of control by the CONTRACTOR, all risks in connection with the construction of the work and the materials to be used therein shall be borne by the CONTRACTOR.
- B. The CONTRACTOR shall be fully responsible for the safety and protection of all persons and of all work and material connected with his contract until the project is finally accepted by the OWNER. The CONTRACTOR shall use proper precautions to fully protect all persons, his own work and that of others, and the property of the OWNER and others from injury and damage, and at his own expense he shall be liable for injury to all persons and shall make good all damage and injury to property belonging to the OWNER and others caused by himself and his employees through negligence, carelessness, or any other cause.
- C. The OWNER and ENGINEER shall not be responsible for the methods and means employed by the CONTRACTOR in the performance of the CONTRACTOR'S work. The ENGINEER shall have no responsibility for the safety of the workmen and others who may be injured during the course of the CONTRACTOR'S work.
- D. The CONTRACTOR must have a designated representative available on short notice who is capable of making decisions and giving directions at any time there is work ongoing.



**5. SITE OF THE WORK:**

- A. Each CONTRACTOR submitting a bid or a proposal on this project and each Subcontractor estimating and furnishing a bid under any division and/or section of this Contract to the CONTRACTOR shall visit the site of the work and examine its present condition to inform himself as to the nature and scope of all work to be done and all difficulties that may be involved therein.
- B. The submission of a bid or a proposal by the CONTRACTOR to the OWNER or a bid furnished by a Subcontractor to the CONTRACTOR shall be accepted as evidence that the examination referred to in 5A above has been made and that all difficulties encountered have been provided for in his proposal or bid. Later foreseeable claims for extra compensation for labor, materials, and equipment will therefore not be recognized by the OWNER.

**6. CONTRACTOR'S SUPERVISION:**

- A. The CONTRACTOR, or his duly authorized agent with authority to control the work, shall be present at the site whenever the work is in progress. The CONTRACTOR'S authorized agent shall meet with the approval of the ENGINEER.
- B. The OWNER reserves the right to require the removal from the Project of the Superintendent or any other employee of the CONTRACTOR if, in the ENGINEER'S judgment, such removal is necessary to protect the OWNER'S interest.

**7. CARE OF THE WORK:**

- A. The CONTRACTOR shall indemnify and save harmless the OWNER, the ENGINEER, their agents, and their employees from all claims, suits, or proceedings of any nature whatsoever which may be brought against the OWNER, the ENGINEER, their agents, or their employees on account of any injuries to persons or property received from the CONTRACTOR or his agents or servants. See also Paragraph 24 B hereinafter.
- B. The CONTRACTOR shall be responsible for the proper care and protection of all materials delivered and work performed until completion and final acceptance of the project. The CONTRACTOR shall provide adequate barricades and warning signs to properly protect his work and to safeguard the life and property of others. Barricades, open trenches, etc. shall be properly illuminated with flares and/or blinking lights at night. All Traffic Control/warning devices used shall conform with Section VI of the Manual of Uniform Traffic Control Devices.

**8. SCHEDULE OF WORK:**

- A. Before beginning work, the CONTRACTOR shall submit a construction schedule to the ENGINEER for approval. In general, the CONTRACTOR'S work shall be so scheduled as to interfere as little as possible with the operations of the OWNER and other

contractors. All work shall be performed after 7:00 a.m. and before 6:00 p.m., local time, Monday through Saturday unless a specific requirement for overtime work is included elsewhere in the Contract Document, or is specifically granted by the ENGINEER. No work shall be performed on a Sunday without the express permission of the ENGINEER.

- C. The OWNER will use the CONTRACTOR'S work schedule to prepare notification to individual property owners of the general date(s) that they may expect work to be performed in areas adjoining their property. It will be the CONTRACTOR'S responsibility to keep the City advised of any significant changes in the work schedule in a timely manner so that the affected private property owners may be kept informed.

**9. WORKMANSHIP, TOOLS AND CONSTRUCTION EQUIPMENT:**

- A. All work shall be performed in a finished and workmanlike manner, and in accordance with the best recognized trade practices.
- B. The CONTRACTOR shall provide and maintain in good operating condition all tools and construction equipment necessary for the satisfactory performance of the work. Inadequate, unsuitable, defective, worn out, or otherwise unsatisfactory tools and construction equipment shall be removed from the site and replaced with satisfactory tools and construction equipment or the proper repairs shall be made or the unsatisfactory conditions shall be remedied.

**10. CODES, ORDINANCES, REGULATIONS, LAWS, PERMITS, LICENSES AND FEES:**

- A. The CONTRACTOR shall comply with all City, County, State and Federal codes, ordinances, regulations and laws applicable to the work to be done and applicable to the use of public streets, alleys and highways. Such codes, ordinances, regulations and laws shall be considered as minimum requirements, and everything shown or specified in the Contract Documents in excess of these minimum requirements shall be installed in excess thereof, as shown or specified. No instructions given in the Contract Documents shall be construed as an authorization to violate any code, ordinance, regulation or law.
- B. Before beginning work, the CONTRACTOR shall obtain and pay for all licenses and permits required to perform work covered by this contract, shall obtain and pay for all necessary inspections by all applicable authorities, and shall include their cost in the bid price. Whereas certain parts of the work may require the approval of public or other authorities, all work shall be subject to the ENGINEER'S decision before proceeding with the portion of the work involved.

**11. DRAWINGS AND SPECIFICATIONS:**

- A. The drawings accompanying these specifications, and forming a part thereof, are listed elsewhere and, together with the specifications, they cover the work to be performed under the Contract. The CONTRACTOR and each Subcontractor employed on this work

shall carefully examine all contract drawings and read all specifications. They will be bound by all things therein affecting their special work no matter under what heading they may appear.

- B. The drawings and specifications are intended to cover a complete project ready for use, and all items necessary for a complete and workable job shall be furnished and installed. All minor items not specifically covered by the drawings and specifications but required in the construction of the project shall be furnished and installed as though shown or specified. This is not intended to cover major items of equipment or labor not shown or specified, but it is intended and will be interpreted to cover all miscellaneous labor, parts, devices, accessories, controls, and appurtenances which are: required by all applicable codes, ordinances, laws, and regulations; required to complete and place the project in satisfactory operation; and required for a first class job that is complete in every respect.
- C. The drawings and specifications are mutually explanatory and supplementary, and all features covered in one and not in the other shall have the same force and effect as though covered in both. In the event of any conflicts between the drawings and specifications, the ENGINEER'S decision shall govern. Should any error, discrepancy, or variance be discovered in the drawings or specifications by the Contractor or his Subcontractor, the CONTRACTOR shall immediately notify the ENGINEER before beginning the work and submit the question to the ENGINEER for his interpretation and decision. The ENGINEER will be governed by the overall meaning of the documents.
- D. The CONTRACTOR shall keep at least one copy of all drawings and specifications on the project site in good condition and available to the ENGINEER and to his representatives at all times.
- E. No deviations from the drawings and specifications shall be made without the ENGINEER'S prior written approval.
- F. The GENERAL PROVISIONS and the SPECIAL CONDITIONS shall apply to every division and/or section of the STANDARD SPECIFICATIONS, as fully as if quoted verbatim therein.

## **12. STANDARD PUBLICATIONS:**

Wherever in these documents reference is made to standard specifications, standards, codes, or other standard publications, such as "ASTM" (American Society for Testing and Materials), "AASHTO" (American Association of State Highway and Transportation Officials), "ANSI" (American National Standards Institute), "AWWA" (American Waterworks Association), "ACI" (American Concrete Institute), "AISC" (American Institute of Steel Construction), "AWS" (American Welding Society), Federal Specifications, "NEC" (National Electrical Code), or others, in all cases the latest published editions of such referenced standard publications in effect at the time of receipt of bids shall apply.

**13. STANDARD EQUIPMENT AND EQUIPMENT INSTALLATION:**

Except where special equipment is required, it is the general intent of the STANDARD SPECIFICATIONS that manufacturers' standard equipment shall be furnished. Minor variations from the Technical Specifications to accommodate manufacturers' standard equipment will be permissible, provided that the proposed equipment complies substantially with the STANDARD Specifications and that it will accomplish the required results, all to the ENGINEER'S satisfaction.

**14. STANDARDS FOR MATERIALS:**

- A. All materials shall be new, unless used or salvaged materials are authorized by the ENGINEER.
- B. The use of manufacturers' names and catalog numbers in these specifications or on the drawings indicates the type, size, rating, capacity, design, quality, or kind of materials required, and a closed specification is not intended, and similar and equal products of any reputable manufacturer which will satisfactorily perform the required functions will be acceptable, unless otherwise indicated by the words NO SUBSTITUTES, or unless otherwise specifically stated. The ENGINEER reserves the right to reject all materials which he deems not equal to those specified, or which he decides will not satisfactorily perform the required functions.
- C. As promptly as possible after award of contract, and prior to the purchase of materials, the CONTRACTOR shall submit to the ENGINEER for approval a complete list of all proposed materials. The CONTRACTOR shall include with such list complete catalog data and descriptive literature of all materials.

**15. SAMPLES:**

The CONTRACTOR shall furnish to the ENGINEER for approval all samples as specified or requested. Unless otherwise specified, the CONTRACTOR shall submit duplicate samples of adequate size showing quality, type color range, finish, texture, or other specified features. The work shall be in accordance with approved samples.

**16. MATERIALS, SERVICES AND FACILITIES:**

Except as otherwise specifically stated in the Contract Documents, the CONTRACTOR shall provide and pay for all materials, labor, tools, equipment, water, light, power, transportation, superintendence, temporary construction of every nature, and all other services and facilities of every nature whatsoever necessary to execute, complete and deliver the work within the specified time.

**17. INSPECTION AND TESTING OF MATERIALS:**

Where specifically provided for in the specifications, the inspection and testing of materials and finished articles to be incorporated in the work at the site shall be made by bureaus, laboratories, or agencies approved by the ENGINEER. The cost of such inspection and testing shall be paid by the CONTRACTOR. The CONTRACTOR shall furnish evidence satisfactory to the ENGINEER that the materials and finished articles have passed the required tests prior to the incorporation of such materials and finished articles in the work. The CONTRACTOR shall promptly segregate and remove rejected materials and rejected finished articles from the site of the work.

**18. PATENTS:**

The CONTRACTOR shall hold and save harmless the OWNER and its officers, agents, servants, and employees from liability of any nature or kind, including cost and expenses for or on account of any patented or unpatented invention, process, article, or appliance manufactured or used in the performance of the contract, including its use by the OWNER, unless otherwise specifically stipulated in the Contract Documents.

**19. ACCURACY OF DATA AND INTERFERENCES:**

- A. Before beginning any work, the CONTRACTOR shall examine carefully the site of the work and all contract drawings, and shall verify all dimensions, elevations, and all existing conditions.
- B. All work shall be installed to conform as nearly as possible with the dimensions, elevations, locations, and arrangements indicated, with only such minor adjustments as necessary to coordinate the work of the various trades and specification divisions and/or sections: coordinate the work of this contract with that of other contracts; accommodate the actual equipment furnished; avoid all interferences between the various parts of the work; and accommodate existing conditions which may differ from those indicated. Any and all parts of the work installed under this contract which interfere with other parts of the work or other contracts or which deviate from the drawings and specifications without the ENGINEER'S prior approval shall be altered by the CONTRACTOR, at his own expense, to clear such interferences or to comply with the drawings and specifications. All interferences or discrepancies which may be discovered or anticipated shall be reported promptly to the ENGINEER for decision before proceeding with the work. The ENGINEER shall have the privilege of authorizing minor changes without additional cost, provided that such changes are made prior to the commencement of work on the item involved.

**20. LINES, GRADES, STAKES, AND TEMPLATES:**

- A. At his own expense, the CONTRACTOR shall furnish all stakes, templates, patterns, platforms, and labor which may be required in setting and cutting or laying out each part of the work.
- B. Upon CONTRACTOR'S request, the ENGINEER will furnish locations and bench marks reasonably necessary for the execution of the work. The CONTRACTOR shall furnish all lines and grades and will be held responsible for the proper execution of the work to such lines and grades. Lines and grade stakes which are destroyed shall be replaced by the CONTRACTOR at his own expense.

**21. LAND ACQUISITIONS AND RIGHTS OF WAY:**

The properties on which the items included in the contract are to be located will be provided by the OWNER without cost to the CONTRACTOR, and all rights-of-way and easements across private or public property required for the installation of the work will be obtained by the OWNER. The OWNER will make every effort to obtain easements and rights-of-way in sufficient time to allow work to progress in an orderly and expeditious manner. Failure on the OWNER'S part to obtain rights-of-way and easements in sufficient time to cause no interference with the progress of the work will be considered as just cause for allowing extensions of time to the CONTRACTOR in accordance with the time lost because of the lack of rights-of-way and easements.

**22. CONTRACT SECURITY:**

- A. The CONTRACTOR shall furnish Performance and Payment Bonds as security for the faithful performance and payment of all his obligations under the contract documents. These bonds shall be in amounts as shown in the Instructions to Bidders and in the form and with sureties acceptable to the OWNER.
- B. The OWNER shall have the right to waive the surety bond requirements, in which case the CONTRACTOR shall reduce his bid price in the amount of the CONTRACTOR'S cost for such security.

**23. WAGE RATES:**

The CONTRACTOR shall pay at least the minimum wage rates established by law. Such wage rates are minimum rates only, and the OWNER will not consider any claims for additional compensation made by their CONTRACTOR because of payment by the CONTRACTOR of any wage rates in excess of minimum rates, nor will the OWNER consider any claim for additional compensation made by the CONTRACTOR because of wage increases established by law during the life of the contract.

**24. SUBCONTRACTING:**

- A. The CONTRACTOR shall not award any subcontract to any Subcontractor without the ENGINEER'S prior approval. Only those Subcontractors of proven ability whose reputation is known to the ENGINEER for executing first-class work will be approved. The ENGINEER'S approval will not be given until the CONTRACTOR submits to the ENGINEER an itemized written statement designating the name of each Subcontractor and the amount of each subcontract. This statement shall also designate the items of the contract which the CONTRACTOR proposes to execute directly with his own organization. The amount of these items, combined with the amounts of the various subcontract proposals, shall correspond to the contract price for the entire project. The contract will not be signed until all subcontractors have been approved.
- B. The CONTRACTOR shall be as fully responsible to the OWNER for the acts and omissions of his Subcontractors, and of persons either directly or indirectly employed by them, as he is for the acts and omissions of persons directly employed by him.
- C. The CONTRACTOR shall cause appropriate provisions to be inserted in all subcontracts relative to the work to bind Subcontractors to the CONTRACTOR by the terms of the General Provisions and other Contract Documents insofar as applicable to the work of Subcontractors, and give the CONTRACTOR the same power to terminate any subcontract that the OWNER may exercise over the CONTRACTOR under any provisions of the Contract Documents.
- D. Nothing contained in this contract shall create any contractual relation between any Subcontractor and the OWNER. The contractual relationship shall exist between the OWNER and the CONTRACTOR only. It is the CONTRACTOR'S duty, in his own interest, to enter into subcontractual agreements in strict accordance with all provisions of the Contract Documents. The failure of the CONTRACTOR to make the proper agreements with his Subcontractors and suppliers shall in no way relieve the CONTRACTOR of his responsibilities and obligations to the OWNER.
- E. The Standard Specifications are grouped under the various divisions and/or sections for convenience of reference only. Each trade involved is not necessarily represented by a separate specification division and/or section, but rather, such divisions and/or sections are arbitrary and the CONTRACTOR will be permitted to allot portions of the work to Subcontractors at his own discretion, subject to the requirements of this Article 24 of the General Provisions, regardless of grouping of the specifications. It shall be the sole responsibility of the CONTRACTOR to settle definitely with each Subcontractor the portion of the work which each Subcontractor will be required to do. Neither the OWNER nor the ENGINEER will assume any responsibility whatsoever for any claims or disclaims by any of the Subcontractors or trades concerning the responsibility for performing any particular portion of the work, or jurisdiction over any particular type of work.

- F. The CONTRACTOR and all Subcontractors for the various branches of work employed on the project shall cooperate fully with each other to facilitate the progress of the work, and to avoid all interferences between the various parts of the work.
- G. Whenever his work is in progress, each Subcontractor shall have present at the job site a Job Superintendent, foreman, or other duly authorized agent with authority to control the Subcontractor's work. This duly authorized agent shall meet with the approval of the ENGINEER. The ENGINEER reserves the right to remove from the project the Subcontractor's agent or any other employee of the Subcontractor, if, in the ENGINEER'S judgment, such removal is necessary to protect the OWNER'S interest.

**25. PAYMENTS BY CONTRACTORS:**

The CONTRACTOR shall pay:

- (1) for all transportation and utility services not later than the twentieth (20<sup>th</sup>) day of the calendar month following that in which such services are rendered;
- (2) for all materials, tools, and other expendable equipment to the extent of ninety-five percent (95%) of cost thereof not later than the twentieth (20<sup>th</sup>) day of the calendar month following that in which such materials, tools, and equipment are delivered to the project site; and
- (3) to each of his Subcontractors, not later than the fifth (5<sup>th</sup>) day following each payment to the CONTRACTOR, the respective amounts allowed the CONTRACTOR on account of the work performed by his Subcontractor, to the extent of each Subcontractor's interest therein.

**26. TIME FOR COMPLETION FOR WEATHER DELAYS:**

- A. WET CONDITIONS: The required time of completion is given in calendar days in the BID. It is expressly understood and agreed, by and between the Contractor and the Owner, that the time for completion of the work described in the Contract Documents is a reasonable time for completion of the same, taking into consideration the average climatic range and usual lost time due to normal seasonal weather in this locality.

Time for completion in the Contract Documents includes the average number of days that are lost due to wet conditions. The table below shows the average number of days lost in each month due to wet conditions on outdoors civil projects, as heretofore determined by the Memphis and Shelby County Airport Authority and the Associated General Contractors Association, and it will be used to calculate additional time that will be allowed for time lost due to wet conditions.

For the purpose of consistency, the parties hereby agree that they will use the information contained in the table below as a guide, regardless of any differences in the weather at the site of the Project and the Memphis International Airport. The information in the table



below was developed by the Associated General Contractors Association and the Memphis and Shelby County Airport Authority to determine a standard for wet conditions that stop outside work. The table below is not simply a summary of days that it rained, rather, the table shows the average number of days lost in each month due to wet conditions on outdoor civil projects as heretofore determined by the aforesaid parties in relation to one or more outdoor civil projects. This table will be used to calculate additional time that will be allowed for time lost due to wet conditions. The OWNER and the CONTRACTOR agree that it is an acceptable standard and agree to abide by it.

<u>MONTH</u>	<u>AVERAGE DAYS LOST TO NORMAL WET CONDITIONS*</u>
January .....	11.55
February .....	14.40
March .....	7.45
April .....	8.40
May .....	7.50
June .....	7.25
July .....	5.95
August .....	4.85
September .....	5.90
October .....	6.50
November .....	14.85
December .....	14.50

\*Determined by the Memphis and Shelby County Airport Authority in conjunction with the Associated General Contractors Association based on ten (10) consecutive years of Shelby County weather data. The total contract time includes these days that are expected to be lost each month.

Because the Contract Documents prohibit work on Sunday, and because the average number of days of wet weather in the above chart are based on all days of the month and Sundays might or might not be one of such days, to maintain a fair standard for purposes of calculating wet weather days, it will be assumed that an additional two (2.0) wet weather days occurred during each month.

- B. ICE, STANDING SNOW AND FROZEN GROUND: In addition to the work being delayed due to wet conditions (see A. above), it is recognized that the work may also be delayed due to certain conditions relating to ice, snow and frozen ground. Loss of working time may also be claimed and allowed for such conditions in accordance with the provisions of this paragraph. The average number of days lost per month in this locality due to ice, standing snow and frozen ground conditions shall be considered to be zero. Lost days due to ice, standing snow and frozen ground conditions may be claimed, however, if it is caused by one or more of the following conditions which prevent outside construction activity or access to the site within a 24-hour period:

1. Ice which does not melt on a substantial portion of the project by 10 a.m.;

2. Temperatures which do not rise above 32 degrees Fahrenheit by 10 a.m.;  
or
3. Standing snow in excess of one inch (1.00").

C. FURTHER PROVISIONS REGARDING TIME FOR COMPLETION:

- (a) A weather delay day may be counted only if worse than average weather prevents work on the project for fifty percent (50%) or more of the CONTRACTOR'S scheduled work day.
- (b) The CONTRACTOR must submit a Daily Job Site Work Log showing which and to what extent construction activities have been affected by weather on a monthly basis.
- (c) The CONTRACTOR must submit actual weather data to support a claim for the time extension obtained from the nearest NOAA weather station or other independently verified source approved by the Owner at the beginning of the project.
- (d) The CONTRACTOR must maintain a rain gauge, thermometer and clock at the job site and keep daily records of precipitation, temperature and the time of each occurrence throughout the project.
- (e) The CONTRACTOR must organize the claim documentation to facilitate its evaluation on the basis of calendar month periods and submit it monthly to the Owner.
- (f) If an extension of the contract time is appropriate, it shall be effected in accordance with the provisions of Paragraph 27.
- (g) No extra cost will be incurred by the OWNER for any extra time increase to the contract.

EXAMPLE: The following example is given for further clarification of how extra time for wet conditions and/or ice, standing snow or frozen ground is to be calculated. If wet conditions were to occur for a total of sixteen (16) days during the month of January, then the extra contract time allowed would be 16 days minus 11.55 days (from table in 26.A.), or 4.45 days, which may be rounded up to the nearest whole day, or 5.0 days, plus 2.0 additional wet weather days for a total of 7.0 days. Also, if during that same month there was standing snow or any combination of conditions as in B. above for three (3) days, then the Contractor would be allowed an extra 3.0 days in addition to the 7.0 days for wet conditions. The Contractor would get a total of 10.0 extra days. No extra cost will be incurred by the Owner for any extra time increase to the Contract.

**27. CHANGE OF CONTRACT TIME**

The contract time may only be changed by a change order or by a written amendment. Any claim for an adjustment in the contract time shall be based on written notice submitted by the CONTRACTOR within thirty (30) days after the event which caused the delay. The OWNER will render a decision on such a claim within thirty (30) days, and if the OWNER does not render a decision, a decision denying the claim shall be deemed to have been issued thirty-one (31) days after the claim was received. No extra cost will be incurred by the OWNER for any extra time increase to the Contract.

**28. LIQUIDATED DAMAGES:**

- A. It is hereby understood and mutually agreed, by and between the CONTRACTOR and the OWNER, that the date of beginning and the time for completion as specified in the Contract for the work to be done hereunder are ESSENTIAL CONDITIONS of this contract and that TIME IS OF THE ESSENCE with respect to this contract; it is further mutually understood and agreed that the work embraced in this Contract shall be commenced not later than a date to be specified in the "Notice to Proceed".
- B. The CONTRACTOR agrees that said work shall be processed regularly, diligently and uninterruptedly at such rate of progress as will ensure full completion thereof within the time specified. It is expressly understood and agreed, by and between the CONTRACTOR and the OWNER, that the time for the completion of the work described herein is a reasonable time for the completion of the same, taking into consideration the average climatic range and usual conditions prevailing in this locality. If the CONTRACTOR shall neglect, fail or refuse to complete the work within the time herein specified, or any proper extension thereof granted by the OWNER, then the CONTRACTOR does hereby agree, as a part consideration for the awarding of this contract, to pay the OWNER the amount stated in the BID per day, not as a penalty, but as liquidated damages, for such breach of contract, for each and every calendar day that the CONTRACTOR shall be in default after the time stipulated in the contract for completing the work.
- C. The aforesaid amount is fixed and agreed upon by and between the CONTRACTOR and the OWNER because both parties recognize that the OWNER and its citizens will suffer actual damages if the CONTRACTOR fails to complete the work within the time specified herein but such damages are indeterminable and difficult to measure at the time of contracting. In making their agreement regarding liquidated damages, the parties have considered, among other things: (a) that this is a public project, i.e. a project being built by the OWNER for the benefit of and use by its citizens and the public generally, and that any delay in its scheduled completion will cause damages to those persons anticipated to use the project, which will be difficult to measure; and (b) that the OWNER'S staff will be required to monitor the CONTRACTOR throughout the pendency of construction, and the longer that construction takes, the longer the owner will be required to devote the services of its personnel and, in some instances employ the services of its consultants, all at additional expense to the OWNER. The CONTRACTOR recognizes the foregoing,

and agrees that the amount of liquidated damages fixed and agreed upon herein is a reasonable estimate made at the inception of the Contract and agrees that such is not a penalty.

- D. It is further agreed that time is of the essence of each and every portion of this contract and of the SPECIFICATIONS wherein a definite and certain length of time is fixed for the performance of any act whatsoever. Where under the Contract an additional time is allowed for the completion of any work, the new time limit fixed by such extension shall be of the essence for this Contract. The CONTRACTOR shall not be charged with liquidated damages or any excess cost when the OWNER determines that the CONTRACTOR is without fault and the CONTRACTOR's reason(s) for the time extension are acceptable to the OWNER. The CONTRACTOR shall not be charged with liquidated damages or any excess cost when the delay of completion of the work is due:
- (a) to unforeseeable cause beyond the control and without the fault or negligence of the CONTRACTOR; or
  - (b) to any delays of SUBCONTRACTORS or suppliers occasioned by any of the causes specified in subsection (a) immediately above.

Provided, however, that the CONTRACTOR shall, within ten (10) days from the beginning of such delay, notify the OWNER in writing of the causes of the delay. The OWNER shall then ascertain the facts and extent of the delay and notify the CONTRACTOR within a reasonable time of its decision in the matter.

**29. NOTICES AND SERVICE THEREOF:**

- A. All notices, demands, requests, instructions, approvals and claims shall be in writing.
- B. Each notice to or demand upon the CONTRACTOR shall be sufficiently given if delivered at the office of the CONTRACTOR shown by him in the BID (or at such other office as the CONTRACTOR may from time to time designate to the OWNER in writing), or sent via facsimile transmission to CONTRACTOR'S fax number, in each case addressed to such office.
- C. Unless otherwise specified in writing to the CONTRACTOR, all papers required to be delivered to the OWNER shall be delivered to the ENGINEER, and each notice to or demand upon the OWNER shall be sufficiently given if delivered to the ENGINEER'S office or sent via facsimile transmission to the OWNER'S fax number. In each case such shall be addressed to the ENGINEER or to such other representative of the OWNER or to such other address as the OWNER may subsequently specify in writing to the CONTRACTOR for such purposes.
- D. Each such notice or demand shall be deemed to have been given or made as of the time of actual delivery if delivered, or, in the case of facsimile transmissions, at the time when same are properly transmitted by telecommunication device.

**30. RIGHTS OF THE OWNER TO TERMINATE CONTRACT:**

If the CONTRACTOR should be adjudged bankrupt, or if he should make a general assignment for the benefit of his creditors, or if a receiver should be appointed for the CONTRACTOR or any of his property, or if he should persistently or repeatedly refuse or fail to supply enough properly skilled workmen or proper material, or if he should refuse or fail to make prompt payment to persons supplying labor or material for the work under the Contract, or persistently disregard instructions or fail to observe or perform any provisions of the OWNER'S instructions, or fail to observe or perform any provisions of the Contract Documents, or otherwise be guilty of a violation of any provision of the Contract Documents, then the OWNER may, by at least five (5) days prior written notice to the CONTRACTOR, without prejudice to any other rights or remedies of the OWNER under the circumstances, terminate the CONTRACTOR'S right to proceed with the work. In such event, the Surety shall take over the work and prosecute it to completion, by contract or otherwise, and the Surety shall be liable for all costs in excess of the contract price. In such case, the Surety may take possession of, and utilize in completing the work, such materials, appliances, and plant as may be on the site of the work and necessary therefor. The foregoing provisions are in addition to, and not a limitation of, the rights of the OWNER under all other provisions of the Contract Documents.

**31. ASSIGNMENT OF CONTRACT:**

The CONTRACTOR shall not assign the whole or any part of this Contract or any monies due or to become due hereunder without the OWNER'S written consent. In case the CONTRACTOR assigns all or any part of any monies due or to become due under this Contract, the instrument of assignment shall contain a clause substantially to the effect that it is agreed that the right of the assignee in and to any monies due or to become due to the CONTRACTOR shall be subject to prior liens or claims of all persons, firms, and corporations for services rendered or materials supplied for the performance of the work called for in this Contract.

**32. CLAIMS FOR EXTRA COST:**

If the CONTRACTOR claims that any instructions by drawings or otherwise involve extra cost or an extension of time, he shall so notify the OWNER in writing within ten (10) days after the receipt of such instructions, and in all cases before proceeding to execute the work. Thereafter, the procedure shall be the same as that described in Article 33, CHANGES IN WORK. No such claim shall be valid unless it is made in accordance with the terms of Article 33.

**33. CHANGES IN WORK:**

- A. At any time, by a written order and without notice to the sureties, the OWNER may make changes in the drawings and specifications of this Contract and within the general scope thereof. In making any change, the charge or credit for the change will be determined by

the OWNER by one of the following methods prior to the issuance of the order for the changed work:

- (1) Method 1: The order shall fix the total lump sum value of the change, and shall establish the amount which shall be added to or deducted from the contract price. On all changes involving extras which will be added to the contract price, the price of the extras shall include the CONTRACTOR'S overhead and profit, which shall be as described in Method (4) below. On all changes which involve a new credit to the OWNER, no allowance for overhead and profit shall be figured, except as otherwise noted in Method (2) below;
- (2) Method 2: If the change involves construction items for which unit bid prices are shown in the BID, the amount to be added to or deducted from the contract price shall be determined by multiplying the unit quantities of the items to be added or omitted by the corresponding unit bid prices for the items involved, without further allowance for CONTRACTOR'S overhead and profit;
- (3) Method 3: If the work is performed on a unit price basis and the change involves adding construction items for which no unit prices are shown in the BID, the unit prices for the items involved shall be estimated by Method (1) above or Method (4) below, based upon cost data of similar bid items. The amount to be added to the contract price shall be determined by multiplying the unit quantities of the item to be added by this estimated unit price;
- (4) Method 4: Upon the OWNER'S order, the CONTRACTOR shall proceed with the work and keep and present to the OWNER, in such form as the OWNER may authorize, a correct account of the total cost of the change, together with all vouchers therefor. The total cost shall be determined as follows:
  - a. Compute the net cost of the change, which shall include: direct labor and items incidental to labor, such as public liability insurance, workmen's compensation insurance, and social security; materials and sales taxes on materials; the actual use of power tools and equipment; power; and pro-rata charges for foremen.
  - b. Except as otherwise specified in Paragraph B below, compute an allowance for overhead and profit. This allowance shall not exceed the following percentages of the net cost of the change as determined in Paragraph (4)a above: for all work performed, an allowance of 10% overhead and 10% profit shall be allowed; and an additional allowance of a 5% handling charge may be allowed for work performed by a sub-contractor. In no case shall the 10% overhead and 10% profit be applied to any work which has previously had these allowances added, nor shall the 5% handling charge be applied to any work which is not Subcontracted. The 5% handling charge may be applied to the net cost of the change plus its allowable overhead and profit. Among the items which

may be considered as overhead are: bond or bonds; supervision; superintendents; timekeepers; clerks; watchmen; small tools; incidental job burdens; general office expenses; and insurance other than that noted in Paragraph (4)a above.

- c. The sum of the amounts computed in accordance with Paragraphs (4)a and (4)b above shall constitute the total cost of the Change Order, except as otherwise specified in Paragraph B below.
- B. Where a cash allowance is included in the BID for authorized Contract Amendments or other purposes, the CONTRACTOR shall include in his total bid price all overhead, profit, and handling charges on the stated amount of the allowance. On all changes in the work which are to be paid for by this allowance, the CONTRACTOR shall not add to the net cost of the change any additional overhead and profit or any handling charges. However, if any part of such work is subcontracted, each Subcontractor and Sub-subcontractor may allow himself not more than 10% overhead and 10% profit, as described in Paragraph (4)b above, but shall not include any handling charges.
- C. Where required by the OWNER, the CONTRACTOR shall furnish to the OWNER an itemized breakdown of the quantities and prices used in computing the value of each change that may be authorized.
- D. In figuring changes, instructions for measurement of quantities as set forth in the specifications shall be followed.
- E. During the progress of the work, should the CONTRACTOR encounter, or the ENGINEER or OWNER discover, subsurface or latent conditions at the site differing materially from those shown on the drawings or indicated in the specifications, or unknown conditions of an unusual nature differing materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the drawings and specifications, the ENGINEER'S attention shall be called immediately to such conditions before they are disturbed. The ENGINEER will thereupon promptly investigate the conditions. If he finds that they do materially differ, with the written approval of the OWNER, the Contract will be modified to provide for the increase or decrease of cost and difference in time resulting from such conditions.

**34. SANITARY FACILITIES:**

Where satisfactory sanitary facilities are not available to the job, the CONTRACTOR shall construct and maintain, at his expense, temporary toilet facilities complying with all local health department requirements and satisfactory to the ENGINEER, and shall remove them after completion of the project.

**35. CUTTING AND PATCHING:**

- A. Generally, cutting of new construction shall be avoided wherever possible by the proper coordination between the various trades, and by the placing of proper sleeves, inserts, bolts, and other items in the construction as the work progresses.
- B. However, where subsequent cutting of new construction or cutting of existing construction is required, it shall be done in a neat, careful, and approved manner, without unnecessary or extensive damage to the construction involved, and only to such an extent that is reasonably necessary for the installation of the work.
- C. All patching, repairing, and altering shall be done only by mechanics skilled in the various trades involved, using materials and workmanship to match those of the original construction in type and quality.
- D. All existing construction which is disturbed or damaged in any way by the CONTRACTOR'S operations shall be restored at least to the conditions which existed before work was begun, unless otherwise indicated.

**36. REMOVAL OF DEBRIS:**

During the progress of the work, the CONTRACTOR shall remove and properly dispose of the resultant dirt and debris and keep the premises reasonably clear thereof. Upon completion of the work he shall: remove all construction equipment and unused materials provided for the work; put all the buildings, structures, and premises in a neat and clean condition; and do all cleaning and washing required by the specifications.

**37. USE OF COMPLETED WORK:**

- A. The ENGINEER may accept a section or sections of a project before the entire project is completed. Such section(s) shall be of reasonable size, as determined by the ENGINEER, and shall be completed in full accordance with the Plans, Specifications and all other applicable provisions of the Contract. The acceptance of a section or sections of a project shall in no way void or alter any of the terms of the Contract.
- B. Upon written request to the CONTRACTOR, the OWNER may elect to place any one or more of the approved completed portions of the work in operation, in which event the OWNER shall assume complete and sole responsibility for those portions of the work covered in the written request; provided, however, that nothing contained herein shall relieve the CONTRACTOR of any liability with respect to defective workmanship and materials as provided for under Article 40, GUARANTEE, below.



**38. STARTING, TESTING, AND ADJUSTING:**

Upon substantial completion of all work under this contract and after the ENGINEER'S preliminary inspection thereof, the CONTRACTOR shall maintain one or more qualified competent workers on the job as required: to put the project in operation; to conduct all specified tests; to make all necessary corrections and adjustments to obtain specified, indicated, and satisfactory operation; and if a trial run is specified in SPECIAL CONDITIONS or the TECHNICAL SPECIFICATIONS, to cooperate with, assist, and instruct the OWNER'S representatives during the required trial run. Failure of the CONTRACTOR to comply with this requirement of the contract shall be considered just cause for delaying final approval and acceptance of the work, delaying the commencement of the guarantee period, and withholding any and all funds which may then be due the CONTRACTOR.

**39. TAXES:**

The CONTRACTOR shall pay all applicable Federal, State and Local taxes and shall include the total amount of the taxes in the bid price.

**40. GUARANTEE**

- A. All labor and material furnished by the CONTRACTOR covered by the drawings and specifications and official modifications thereof shall be guaranteed by the CONTRACTOR for a period of one (1) year from the date of final acceptance of the completed project by the OWNER. All necessary repairs required during this period due to defective workmanship or material shall be made promptly by the CONTRACTOR without cost to the OWNER at times convenient to the OWNER. An additional one (1) year guarantee period from the date of acceptance of the repaired item by the OWNER shall apply to any such repaired item.
- B. The ENGINEER shall have the sole right to establish the beginning of the guarantee period for all portions of the project, and if so stated in the SPECIAL CONDITIONS or the STANDARD SPECIFICATIONS, the guarantee period shall not begin until a trial run has been completed with satisfactory operation, to be determined in the sole discretion of the OWNER, for the period of time stated in the SPECIAL CONDITIONS or the STANDARD SPECIFICATIONS. It shall be the CONTRACTOR'S duty to make all final adjustments, perform all miscellaneous clean-up work, and conduct all specified performance tests. Final acceptance will not be given until the completion of all final adjustments, clean-up work, and tests.
- C. Where certain portions of the project are placed in use before the entire project is completed, the guarantee period for the equipment or items placed in use shall begin prior to the acceptance date of the entire project.

**41. SAFETY AND HEALTH REGULATIONS**

- A. The CONTRACTOR shall comply with the Department of Labor Safety and Health Regulations for construction promulgated under the Occupational Safety and Health Act of 1970 (PL 91-596) and under Section 107 of the Contract Work Hours and Safety Standards Act (PL 91-54).
- B. Authorized representatives of the Department of Labor shall be permitted free access to the project for inspections.

**42. ARCHITECTURAL PROVISIONS:**

The following provisions shall be applicable in the event that a licensed architect is involved with the Project:

- A. The drawings, specifications and other documents prepared by the ARCHITECT are instruments of the ARCHITECT'S service through which the Work to be executed by the CONTRACTOR is described. The CONTRACTOR may retain one contract record set. Neither the CONTRACTOR nor any Subcontractor, Sub-subcontractor or material or equipment supplier shall own or claim a copyright in the drawings, specifications and other documents prepared by the ARCHITECT, and unless otherwise indicated the ARCHITECT shall be deemed the author of them and will retain all common law, statutory and other reserved rights, in addition to the copyrights. All copies of the drawings, except the Contractor's record set, shall be returned or suitably accounted for to the ARCHITECT, on request, upon completion of the work. The drawings, specifications and other documents prepared by the ARCHITECT, and copies thereof furnished to the CONTRACTOR are for use solely with respect to this Project. They are not to be used by the CONTRACTOR or any Subcontractor, Sub-subcontractor or for additions to this Project outside the scope of the Work without the specific written consent of the OWNER and ARCHITECT. The CONTRACTOR, Subcontractors, Sub-subcontractors and material or equipment suppliers are granted a limited license to use and reproduce applicable portions of the drawings, specifications and other documents prepared by the ARCHITECT appropriate to and for use in the execution of Work under the Contract Documents. All copies made under this license shall bear the statutory copyright notice, if any, shown on the drawings, specifications and other documents prepared by the ARCHITECT. Submittal or distribution to meet official requirements or for other purposes in connection with this Project is not to be construed as publication in derogation of the ARCHITECT'S copyright or other reserved rights. PROVIDED, HOWEVER, notwithstanding any provision in this Section 42.A to the contrary, it is understood and agreed that the OWNER shall be the owner of all drawings, specifications and other documents prepared by the ARCHITECT for this Project and that the OWNER may make any use of same as is lawful.
- B. The ARCHITECT will not have control over or charge of and will not be responsible for construction means, methods, techniques, sequences or procedures, or for safety precautions and programs in connection with the Work, since these are solely the

CONTRACTOR'S responsibility. The ARCHITECT will not be responsible for the CONTRACTOR'S failure to carry out the Work in accordance with the Contract Documents. The ARCHITECT will not have control over or charge of and will not be responsible for acts or omissions of the CONTRACTOR, Subcontractors, or their agents or employees, or of any other persons performing portions of the Work.

- C. The ARCHITECT will have authority to reject Work, which does not conform to the Contract Documents. Whenever the ARCHITECT considers it necessary or advisable for implementation of the intent of the Contract Documents, the ARCHITECT will have authority to require additional inspection or testing of the Work whether or not such Work is fabricated, installed or completed. However, neither this authority of the ARCHITECT nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the ARCHITECT to the CONTRACTOR, Subcontractors, material and equipment suppliers, their agents or employees, or other persons performing portions of the Work.
- D. The ARCHITECT will review and approve or take other appropriate action under the CONTRACTOR'S submittals such as shop drawings, product data and samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The ARCHITECT'S action will be taken with such reasonable promptness as to cause no delay in the Work or in the activities of the OWNER, CONTRACTOR or separate contractors, while allowing sufficient time in the ARCHITECT'S professional judgment to permit adequate review. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the CONTRACTOR as required by the Contract Documents. The ARCHITECT'S review shall not constitute approval of safety precautions or, unless otherwise specifically stated by the ARCHITECT, of any construction means, methods, techniques, sequences or procedures. The ARCHITECT'S approval of a specific item shall not indicate approval of an assembly of which the item is a component.
- E. The ARCHITECT will interpret and decide matters concerning performance under the requirements of the Contract Documents on written request of either the OWNER or CONTRACTOR. The ARCHITECT'S response to such requests will be made with reasonable promptness and within any time limits agreed upon.
- F. Interpretations and decisions of the ARCHITECT will be consistent with the intent of and reasonably inferable from the Contract Documents and will be in writing or in the form of drawings. When making such interpretations and decisions, the ARCHITECT will endeavor to secure faithful performance by both OWNER and CONTRACTOR, will not show partiality to either and will not be liable for results of interpretations or decisions so rendered in good faith.

**43. MODIFICATIONS TO GENERAL PROVISIONS**

Modifications to these GENERAL PROVISIONS, if any, shall be as specified in SPECIAL CONDITIONS.

[END OF GENERAL PROVISIONS]

## **SPECIAL CONDITIONS**

### **1. SCOPE OF THE CONTRACT:**

- A. The work required under this Contract includes furnishing and paying for all necessary materials, labor, tools, equipment, and other items necessary for the AHU replacement at the Germantown Police Department complete in every detail, ready for the City's beneficial use as specified herein and/or indicated on the contract drawings. The project shall consist of, but is not limited to, the following items:
  - 1. Demolition of existing AHU-6
  - 2. Installation of new chilled water piping
  - 3. Installation of new automatic control valves
  - 4. Modifications to existing ductwork
  - 5. Installation of Staefa Control System
- B. Terms and definitions defined in Paragraph 1 of the General Provisions are applicable to these Special Conditions.

### **2. MODIFICATIONS AND ADDITIONS TO TECHNICAL SPECIFICATIONS:**

- A. In the event of conflict between the TECHNICAL SPECIFICATIONS, Construction Drawings, the General Provisions or Special Conditions contained herein, and/or product manufacturer's specifications the more stringent shall apply. However, all conflicts shall be brought to the attention of the INSPECTOR for approval.
- B. The cost of all required material inspections and testing, including, but not limited to earthwork and concrete testing, shall be paid for by the CONTRACTOR.

### **3. WORK ITEMS AND MATERIAL NOT LISTED IN THE BID:**

Cost for work and/or material and/or services not specifically listed in the BID but needed for a complete product as set forth in the Plans and Specifications shall be incidental to the work items listed in the BID, unless otherwise shown on the drawings or specified herein.

### **4. AWARD OF CONTRACT:**

- A. See Information for Bidders and Information for Successful Bidder.
- B. Instances of conflict between unit price and amount shown in the BID shall be by

the unit price. The amount to be considered in the bid will be the product of the quantity shown multiplied by the unit price shown by the bidder.

**5. PRE-CONSTRUCTION CONFERENCE:**

- A. After the Contract is awarded, and incident to the issuance of the Notice to Proceed, the ENGINEER will conduct a pre-construction conference.
- B. The CONTRACTOR shall be prepared during the conference to:
  - 1. Present a general sequence of operations, including major work items along with anticipated completion dates.
  - 2. Present a list of all sub-contractors to be used in the execution of the work under this project.
  - 3. Discuss any of the submittals and/or respond to any questions the OWNER may have regarding the submittals.
  - 4. Advise the OWNER of all anticipated construction problems and difficulties with the OWNER'S operations, and present plans to avoid unnecessary interference therewith.
  - 5. Discuss conflicts between the proposed work and any existing utilities with the representatives of the affected utilities. Determine the relocation plans, if required, of the utilities and develop a schedule that will coordinate the relocation plans of the utility with the work.
  - 6. Obtain the interpretation, clarification, and/or the OWNER'S decision concerning requirements of the drawings, specifications, or other contract documents which the CONTRACTOR finds unclear. Discuss any other items pertaining to the work, as desired.
- C. The ENGINEER will furnish to the CONTRACTOR written minutes of the Pre-Construction Conference, verifying the interpretations, clarification, instructions, agreements, and other information pertinent to the Project resulting from the conference.

**6. LINES, GRADES, STAKES, AND TEMPLATES:**

- A. The construction horizontal and vertical control staking shall be performed by a licensed engineer or land surveyor acceptable to the OWNER.
- B. The following shall be the minimum requirements of the Project for construction control staking:

1. Establish Centerline or Baseline Control
    - a. Establish in field all control points, P.I.'s, P.C.'s, P.T.'s, P.O.T.'s, etc.
    - b. Establish in field points on line of Centerline or Baseline.
      1. Maximum 100' intervals for straight tangents
      2. Maximum 50' intervals for horizontal curves
    - c. The stationing used shall correspond to the Centerline or Baseline stationing used in the plans. All points shall be labeled with the appropriate station.
    - d. All control points shall be referenced so they may be easily and accurately re-established.
    - e. The establishment of the Centerline or Baseline Control for the entire Project shall be established before any construction staking will be undertaken.
  2. Field notes shall be kept in a Surveyor's Field Book of all construction and staking performed. The Field Book shall be available for review or reference by the OWNER or CONTRACTOR at all times.
- C. Prior to final acceptance, the CONTRACTOR shall have a licensed engineer or land surveyor certify that the work has been constructed and completed essentially to the lines and grades shown on the contract drawings. Receipt of said certification under the signed seal of the engineer or land surveyor shall be a condition of release of the final payment for the Contract.

**7. WATER AND ELECTRICITY FOR CONSTRUCTION:**

- A. Water: At no cost to the CONTRACTOR, the OWNER will furnish all necessary water for testing, sterilizing, flushing, dust control and other construction purposes, subject to following conditions:
1. Water will be available from existing facilities at locations designated by the OWNER. The CONTRACTOR shall obtain a fire hydrant use permit. The fee for the permit will be waived; however, the CONTRACTOR should be prepared to provide the estimated quantity of water to be used. The CONTRACTOR shall provide all necessary hoses, temporary pipework, portable tanks, and other equipment to convey and use water.
  2. The CONTRACTOR and subcontractors shall carefully conserve all water, and not waste it unnecessarily. If, in the opinion of the OWNER, the CONTRACTOR is using excessive amounts of water, the OWNER may require the CONTRACTOR to begin paying for all water used after such determination.

- B. Electricity: At its own expense, the CONTRACTOR shall provide all electric power for the Project construction.

**8. LABORATORY TESTING:**

- A. The cost of laboratory testing services specified for concrete work, paving materials, and base course, and the cost of laboratory inspection, and stamping of pipe, fittings, equipment and other materials shall be included in the various unit prices; no separate payment shall be made thereof.
- B. The OWNER may, at its own expense, make arrangements for any additional testing services that it may deem appropriate. These tests shall in no way release the CONTRACTOR of his responsibility to provide a quality product meeting the specification requirements for materials and workmanship of the project.

**9. EXISTING UTILITIES, STRUCTURES, AND OTHER PROPERTY:**

- A. The position of pole lines, conduits, water mains, sewers, storm drains, natural gas lines, and other above and below ground utilities and structures is not necessarily shown on the contract drawings. Where shown, the accuracy of the position of such utilities and structures is not guaranteed. Before construction begins, the CONTRACTOR shall inform himself of the exact location of all such utilities and structures, and shall assume all liability for damaging them. Unless otherwise specified, the CONTRACTOR shall support all such utilities and structures, or temporarily remove them, and restore them to the satisfaction of the owners of the utilities and /or structures.
- B. After commencing work, the CONTRACTOR shall use every precaution to avoid interfaces with existing underground and surface utilities and structures, and to protect them from damage.
- C. The CONTRACTOR shall contact owners of underground utilities to determine the exact location of those utilities before performing any construction in the immediate vicinity of those respective utilities. Contact for relocation shall be made through the Tennessee One Call service, telephone number 1-800-351-1111. The location of the services must be requested three (3) days prior to digging.

Utility	Owner	Telephone
Gas and Electricity	Memphis Light, Gas, and Water	901-367-3300 (Hickory Hill Work Center)
Sewer and Water	City of Germantown	901-757-7350
Cable Television	Comcast	901-351-1111
Telephone	AT&T	800-351-1111
Traffic Signal	City of Germantown	901-757-7281



D. The CONTRACTOR shall repair or pay for any damage caused by his operations to all utility property, and private property whether it is above or below ground, and he shall settle in total cost all damage suits which may arise as a result of his operations.

**10. EXISTING UTILITY RELOCATIONS AND/OR ADJUSTMENTS:**

- A. All relocations and/or adjustments required for electrical facilities, natural gas mains and service lines, and related appurtenances shall be performed by Memphis Light, Gas, and Water.
- B. Telephone lines and cables, above and below ground, shall be relocated and/or adjusted as needed by AT&T Telephone Company.
- C. Television cable lines shall be relocated and/or adjusted as necessary by Comcast.
- D. All sanitary sewer and service lines and storm drainage facilities shall be relocated and/or adjusted, as required, by the CONTRACTOR and at his expense.
- E. The CONTRACTOR shall cooperate fully with each of the companies named in A, B, and C above. The CONTRACTOR shall cooperate and schedule his work with these utilities to avoid all interference with each utility's and CONTRACTOR'S work.
- F. The charges, if any, of the companies named in A,B and C above shall be the responsibility of the CONTRACTOR.

**11. ACCESS TO PROPERTIES DURING CONSTRUCTION:**

- A. Each property owner affected by the Project will be provided with continuous access to his respective property. The CONTRACTOR shall plan his work so as to ensure this. When the situation requires, the CONTRACTOR shall provide signage and barricades to redirect local traffic to the appropriate detour.
- B. Failure to provide appropriate signage and barricades shall be cause for the OWNER to stop work on all activities associated with the Project.

**12. VEHICULAR TRAFFIC AND PEDESTRIAN WARNINGS:**

**The Contractor shall:**

- A. Schedule and perform all work to interfere as little as possible with vehicular and pedestrian traffic flow. Poor planning and gross inconsideration of traffic flow will be just cause to stop the CONTRACTOR'S work until the unsatisfactory conditions have been remedied.

- B. Mark clearly all open ditches, open excavations, soft backfill, parked equipment, etc. with signs, fences, and/or barricades during daytime hours, and, in addition, with lights at night and maintain all flares, signs, fences, and/or barricades during weekend, holiday and all other times when work is not in progress.
- C. Provide adequate signage, barricades, fences, and watchmen to comply with the requirements of all authorities having jurisdiction, and, as necessary, for the safety and convenience of the general public.
- D. All traffic control shall conform to Section VI of the Manual on Uniform Traffic Control Devices as adopted by the Federal Highway Administration and the Tennessee Department of Transportation.
- E. All existing structures, trees, fences, etc. that are not required to be removed in the execution of the work shall be preserved as specified in the appropriate sections of the Technical Specifications portion of this document.

**13. EROSION AND SILTATION:**

**The Contractor shall:**

- A. During Project construction, use every precaution and make all provisions as required to minimize erosion and siltation, and to prevent damage to adjacent properties by erosion and siltation resulting from performance under this Contract.
- B. All adjacent properties damaged by erosion and/or siltation resulting from this Project are shall be restored to at least pre-construction conditions by the CONTRACTOR.

**14. AIR QUALITY PROTECTION:**

- A. General: The CONTRACTOR shall use suitable precautions to minimize air pollution during the progress of the work. The CONTRACTOR shall maintain all excavations, stockpiles, and all other work areas within and without the Project boundaries free from dust that would cause the standards for air pollution to be exceeded, thus causing a hazard or nuisance to others. All equipment utilized for dust control shall be of safe design and/or of sufficient capacity for the intended work. The CONTRACTOR shall perform dust control as the work proceeds and when a dust hazard or nuisance occurs.
- B. Burning: No burning will be permitted.

**15. CHANGES IN WORK:**

- A. See Paragraph 33 of the General Provisions.
- B. If conditions described in Paragraph 33E of the General Provisions are encountered and the CONTRACTOR fails to notify the ENGINEER and/or proceeds to work in area(s) without written permission from the ENGINEER, the CONTRACTOR shall assume full responsibility for all work performed. All unacceptable work performed under these conditions shall be promptly repaired or replaced at the CONTRACTOR'S expense with no cost to the City. No extra cost shall be allowed for any work performed in the area(s) described in Paragraph 33E without written approval from the ENGINEER.

**16. CLEAN UP:**

In addition to the requirements of Paragraph 36 of the General Provisions, the site and structures to be constructed thereon shall be maintained and kept clean and free of rubbish, unused materials, and equipment during the construction period. The CONTRACTOR shall remove all dirt, rubbish, and surplus materials of all descriptions, including equipment not in use, and maintain the site in a neat and orderly condition, all as approved by the OWNER in its sole discretion. Materials and equipment known to belong to others shall not be removed from the site without duly notifying the owner thereof.

**17. WEATHER CONDITIONS:**

In the event of temporary suspension of work, or during a period of inclement weather, or whenever the ENGINEER shall direct, the CONTRACTOR will protect, and will cause his subcontractor(s) to protect, the CONTRACTOR'S and the respective subcontractor's work and materials against damage or injury from the weather. If, in the opinion of the ENGINEER, any work or materials are damaged by reason of the failure of the CONTRACTOR or any of his subcontractors to protect said work or materials, such work or materials shall be removed and replaced at the expense of the CONTRACTOR.

**18. SUBSTANTIAL COMPLETION:**

- A. Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so that the OWNER can occupy or utilize the Work for its intended use.
- B. When the CONTRACTOR considers that the Work, or a portion thereof which the OWNER agrees to accept separately, is substantially complete, representatives of the OWNER and the CONTRACTOR will make a thorough inspection of the entire Project and prepare a "Punch List" of all items requiring correction or additional work prior to final payment. Failure to include an item on such list

does not alter the responsibility of the CONTRACTOR to complete all Work in accordance with the Contract Documents.

- C. Upon receipt of the CONTRACTOR'S Punch List, the ENGINEER or the OWNER'S designee (as applicable) will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the inspection by the ENGINEER or the OWNER'S designee (as applicable) discloses any item, whether or not included on the CONTRACTOR'S Punch List, which is not sufficiently complete in accordance with the Contract Documents so that the OWNER can occupy or utilize the Work or designated portion thereof for its intended use, the CONTRACTOR shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the ENGINEER, or the OWNER'S designee, (as applicable). In such case, the CONTRACTOR shall then submit a request for another inspection by the ENGINEER or OWNER'S designee to determine Substantial Completion.
- D. When the Work or designated portion thereof is substantially complete, the ENGINEER or OWNER'S designee will prepare a Certificate of Substantial Completion, which shall establish the date of Substantial Completion, shall establish responsibilities of the OWNER and CONTRACTOR for security, maintenance, heat, utilities, damage to the Work and insurance, and shall fix the time within which the CONTRACTOR shall finish all items on the Punch List accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.
- E. The Certificate of Substantial Completion shall be submitted to the OWNER and CONTRACTOR for their written acceptance of responsibilities assigned to them in such Certificate.

**19. PARTIAL OCCUPANCY OR USE:**

- A. The OWNER may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated in accordance with the Special Conditions herein contained, provided such occupancy or use is consented to by the insurer and authorized by public authorities having jurisdiction over the Work. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the OWNER and CONTRACTOR have accepted in writing the responsibilities assigned to each of them for payments, retainage, if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the CONTRACTOR considers a portion substantially complete, the CONTRACTOR shall prepare and submit a Punch List to the ENGINEER or OWNER'S designee (as applicable) as provided under Section 17.

- B. Immediately prior to such partial occupancy or use, the OWNER, the CONTRACTOR and ENGINEER or OWNER'S designee (as applicable) shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

**20. FINAL INSPECTION AND FINAL PAYMENT:**

- A. After the CONTRACTOR has corrected all of the items listed on the Punch List to the satisfaction of the ENGINEER or the OWNER'S designee (as applicable), the ENGINEER or the OWNER'S designee (as applicable) will notify the CONTRACTOR, in writing, that the project is accepted (i.e., the "Notice of Acceptance") and final payment will be made to the CONTRACTOR not less than thirty (30) days thereafter.
- B. The CONTRACTOR'S one (1) year guarantee period will commence with the date of the Notice of Acceptance. All necessary repairs required during this period due to defective workmanship or material shall be made promptly by the CONTRACTOR without cost to the OWNER at times convenient to the OWNER. An additional one (1) year guarantee period from the date of acceptance of the repaired items by the OWNER shall apply to any such repaired item.
- C. Neither final payment nor any retained percentage shall become due until the CONTRACTOR submits to the OWNER: (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the OWNER or the OWNER'S property might be responsible or encumbered (less amounts withheld by OWNER) have been paid or otherwise satisfied; (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect and will not be cancelled or allowed to expire until at least thirty (30) days' prior written notice has been given to the OWNER; (3) a written statement that the CONTRACTOR knows of no reason that the insurance will not be renewed to cover the period required by the Contract Documents; (4) consent of surety, if any, to final payment; and (5) other data requested by the OWNER establishing payment or satisfaction of obligations, such as receipts, releases and waivers of liens, claims, security interests or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the OWNER. If a Subcontractor refuses to furnish a release or waiver required by the OWNER, the CONTRACTOR may furnish a bond satisfactory to the OWNER to indemnify the OWNER against such lien. If such lien remains unsatisfied after payments are made, the CONTRACTOR shall refund to the OWNER all money that the OWNER may be compelled to pay in discharging such lien, including all costs and reasonable attorneys' fees.

- D. If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the CONTRACTOR or by issuance of Change Orders affecting final completion, the OWNER may in the OWNER'S sole and absolute discretion, upon application by the CONTRACTOR without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the CONTRACTOR to the ENGINEER or OWNER'S representative (as applicable) prior to certification of such payment. Such payment, if any, shall be made under terms and conditions governing final payment.
- E. The making of final payment shall not constitute a waiver of claims by the OWNER.
- F. Acceptance of final payment by the CONTRACTOR, a Subcontractor or material supplier shall constitute a waiver of claims by that payee.

[END OF SPECIAL CONDITIONS]

## **SPECIFICATIONS**

### **AIR HANDLING UNIT REPLACEMENT GERMANTOWN POLICE DEPARTMENT**

15000 - MECHANICAL - GENERAL  
15100 - BASIC PIPING  
15120 - VALVES  
15130 - PIPING SPECIALTIES  
15230 - MECHANICAL IDENTIFICATION  
15250 - MECHANICAL SYSTEMS INSULATION  
15270A - TESTING, BALANCING, AND ADJUSTING  
15530 - HVAC CONTROLS  
15600 - HVAC EQUIPMENT  
15710 - HYDRONIC PIPING  
15800 - HVAC SHEET METAL

## SECTION 15000 - MECHANICAL - GENERAL

### PART 1 – GENERAL

#### 1.01 CONTRACT DOCUMENTS

- A. Refer to and comply with all provisions of the General Conditions, Supplementary Conditions, Division 1, General Requirements, Information for Bidders, and other technical sections of these Specifications in the installation of all mechanical work, as they may apply. Mechanical work includes HVAC, plumbing, and fire protection
- B. Drawings are diagrammatic, due to scale, therefore, all offsets, fittings, valves and accessories are not shown. Plan work around building details and other crafts. Furnish coordination drawings as necessary for the installation.
- C. In case of interference between trades, Engineer will decide which work is to take precedence regardless of work that might be installed.

#### 1.02 CODES, ORDINANCES, INSPECTIONS, PERMITS AND STANDARDS

- A. Work is to be executed and inspected in accordance with local and state codes, laws, ordinances, rules and regulations applicable to particular class of work, and any fees in connection therewith are to be paid by Contractor.
- B. Should any part of Drawings or Specifications be found to be in conflict with applicable codes or ordinances, notify the Engineer or City Purchasing Agent, in writing, 72 hours prior to receiving of bids. After the receiving of bids, any discovery of code violations shall be promptly reported to the Engineer. Any work performed knowingly in violation of codes shall be corrected without additional expense to the Owner or his representative.
- C. Arrange with County, City, or State, if City has no ordinances covering work, for complete inspection, paying all charges pertaining thereto. Give proper authority all requisite notice relating to work under such; afford Engineer and all responsible parties proper notice for all violations of law. Upon completion of work, have work inspected, if required, obtaining certificate of inspection and approval from inspecting agency and deliver such certificate to Engineer.
- D. Wherever applicable, work shall conform to the latest standards of OSHA, NFPA, UL, ASTM, ANSI, AGA, ASME, ASHRAE, SMACNA and ADA.

#### 1.03 SHOP DRAWINGS AND SUBMITTALS

- A. Submit within 10 days after Notice to Proceed, manufacturer's catalog sheets and/or shop drawings covering all phases of work included in this contract.
- B. Submittals shall be complete, arranged in sets, indexed and bound in folders. No loose sheets or partial submittals will be acceptable.



- C. All submittals shall bear written certification to the effect that the Contractor has examined them and found them to be in accordance with specifications and to be dimensionally correct with reference to available space and to related trades.
- D. Submittals are required even though equipment being furnished is exactly as specified.

#### 1.04 COORDINATION DRAWINGS

- A. The HVAC Contractor shall prepare and submit for approval coordination drawings for mechanical rooms and other high interference areas when requested. The drawings shall include fire protection, plumbing, electrical and other divisions of work as necessary to achieve coordination between the various divisions of work. See Section 15800 for other requirements.
- B. The HVAC Contractor shall obtain the necessary information from the other divisions of work as necessary to coordinate these trades with the HVAC.
- C. The coordination drawings shall be drawn to minimum of quarter inch per foot scale, and shall show plan views, elevations and sections as needed to coordinate the work. Equipment room drawings shall be minimum one-half inch per foot scale.
- D. The coordination drawings shall be submitted to the other divisions of work for approval prior to submission to the Engineer. Furnish six (6) sets for review by the Engineer.
- E. Coordination drawings shall also be furnished to show approved deviations from the construction documents when requested.

#### 1.05 SUBSTITUTION OF MATERIALS

- A. Final decision as to whether or not a specific piece of equipment meets specifications shall rest with Engineer.
- B. Any proposed substitutions of equipment shall be accompanied by Shop Drawings showing revised equipment layouts, piping diagrams, and structural modifications. Where substituted equipment furnished requires use of larger, more, or differently arranged connections, such connections shall be installed to the complete satisfaction of Engineer, without additional cost to Owner.
- C. Should a substitution be accepted and subsequently proven unsatisfactory for the service intended within the warranty period, the contractor shall replace this material or equipment with that as originally specified, or corrected as directed by Engineer, at no additional cost to the Owner.

#### 1.06 LOCAL SITE CONDITIONS

- A. Before bidding, make complete investigation at Site in order to be informed as to location of utilities and as to conditions under which work is to be performed. Locations of existing above ground and underground utilities and structures shown were obtained from surveys and/or as built drawings and are not to be assumed as being accurate.

- B. Make determination of soil conditions before bidding. These specifications and accompanying drawings in no way imply as to condition of soil to be encountered.

#### 1.07 GUARANTY-WARRANTY

- A. All materials and equipment shall carry a full year's warranty from time Owner accepts building or the date of substantial completion, whichever is earlier, regardless of start-up date of equipment, unless a longer warranty period is specified under other sections.
- B. The HVAC equipment installation shall be completed in a timely manner, such that the system can be operated to "dry out" the building to permit application of the final building finishes during the construction. Additional air filters shall be furnished as needed during the construction phase.

#### 1.08 RECORD SET DRAWINGS

- A. At completion of this project, the Contractor shall provide Engineer with an electronic copy (AutoCAD) plus one hard copy of all drawings showing all work installed.
- B. These drawings shall incorporate all changes made in the course of the project so as to enable the Owner to properly maintain, operate and repair both exposed and concealed work.

#### 1.09 OWNERS OPERATING AND MAINTENANCE MANUALS

- A. Furnish operating and maintenance data for all mechanical equipment.

#### 1.10 CLEAN UP

- A. Do not allow waste material or rubbish to accumulate in or about job site.
- B. At completion of work, remove all rubbish, tools, scaffolding and surplus materials from and about building, leaving work clean and ready for use without further cleaning required. Clean all equipment, piping, valves, fixtures, and fittings of grease, metal cuttings, insulation cement, dust, dirt, paper labels, etc.
- C. Any discoloration or other damage to buildings, their finishes or furnishings due to failure to properly clean or keep clean mechanical systems shall be repaired without cost to Owner.

#### 1.11 CUTTING AND PATCHING

- A. Provide all cutting and patching required to perform the Mechanical work.
- B. All patching will be done by workmen skilled in the trade required.

END OF SECTION 15000

## SECTION 15100 - BASIC PIPING

### PART 1 - GENERAL

#### 1.01 REFERENCE

- A. For specific piping requirements and materials, refer to the respective sections for the various systems.
- B. See Other Sections of these specifications for VALVES, PIPING SPECIALTIES, SUPPORTS, VIBRATION ISOLATION, SEISMIC RESTRAINTS, INSULATION, TREATMENT, TESTING, IDENTIFICATION, and FIRE STOP SYSTEMS.

#### 1.02 THERMAL EXPANSION

- A. Swing joints, turns, pipe anchors, pipe guides, expansion loops or long off-sets shall be provided where necessary to allow for expansion and contraction. Pipe, fittings or equipment, broken during warranty, shall be replaced.

#### 1.03 OPEN ENDS

- A. Keep ends of pipe, including those extending through and above roof, drains, equipment and fixture branches, closed with caps or plugs to prevent dirt or building material from entering the pipe and traps during construction.

#### 1.04 NOISE CONTROL:

- A. Piping shall be free of any objectionable self-generated noise. Isolate piping from building where required preventing transmission of noise.

#### 1.05 CROSS CONNECTIONS

- A. Under any conditions, piping shall not be installed that permits back-siphonage or any flow of polluted water or other liquid into domestic water piping system.
- B. Air gaps, receptor type drains and approved vacuum breaking devices shall be provided. Piping to hose-end faucets or to inlet below fixture overflow shall have vacuum breakers of make, design, size and location approved by the applicable code.

#### 1.06 ACCESS DOORS AND PANELS

- A. Provide access doors for adequate accessibility to valves, drains, traps, and other devices requiring access for maintenance where such devices are concealed within inaccessible ceilings, walls or floors. Access doors minimum size shall be 10" x 12". Access doors shall be coordinated with the architect for locations and appearances.

#### 1.07 SUBMITTALS

- A. Submit brochures or other data for approval of all items specified.

## 1.08 FIRE STOPPING

- A. Provide fire stopping at all pipe penetrations of fire and/or smoke walls and floors.

## PART 2 – PRODUCTS

### 2.01 MATERIALS

- A. All pipe and fittings shall be made in the USA and shall be labeled accordingly.
- B. For materials to be used on the various piping systems, refer to the specific piping sections for the various systems.
- C. FIRE-STOPPING
  - 1. Fire-stopping products shall be 3M. See Section 15140.
- D. CONDENSATE DRAINS: See Section 15420.
- E. EXPANSION LOOPS: Metraflex metraloop, same material as piping.
- F. FLEXIBLE PIPE CONNECTORS
  - 1. Double sphere neoprene connectors rated for 150 psi at 220°F. Model MFTFU or MFTNC as manufactured by Mason Industries, Inc. or approved equal.
  - 2. Install control cables when connectors are installed in unanchored piping or connected to isolated equipment and the pressure exceeds values recommended by the manufacturer.

### 2.02 ACCESS DOORS AND PANELS

- A. Access doors to 16" x 24" size shall be "VENTLOCK" steel insulated access doors.
- B. Larger access doors shall be steel double panel construction with 1" rigid insulation between panels. Doors with largest dimension over 24", but less than 48", shall use "VENTLOCK" series 200 latches, hinges and gasketing, and construction shall be 22-gage galvanized steel. Doors with largest dimension over 48", shall use "VENTLOCK" series 300 latches, hinges and gasketing, and construction shall be 20-gage galvanized steel.
- C. Access doors shall be UL listed where fire-proofing membranes are penetrated.
- D. Equivalent access doors by Kees or Air Balance are acceptable.

## PART 3 – EXECUTION

### 3.01 ARRANGEMENT

- A. Exposed lines are to be run parallel with, or perpendicular to, building lines and wherever possible shall be grouped together for easier service and identification. Lines requiring a definite grade for drainage shall have precedence in routing over all other lines.

Wherever possible, horizontal and vertical lines shall be held as close as possible to walls, ceilings, struts and members so as to occupy minimum space consistent with the proper requirements for insulation, expansion, removal of pipe and access to valves. All concealed work shall finish off within limits permitted by vertical or horizontal chases. Arrange for concealment of all piping in finished area of buildings unless otherwise noted.

- B. Piping shall be worked into place without springing and/or forcing. All piping shall be arranged so as not to interfere with removal of other equipment or devices, not to block access to doors, windows, manholes, or other access openings.
- C. All piping shall be installed so as to avoid liquid or air pockets throughout the work. Piping shall be erected and pitched to insure proper draining. Air vents, manual or automatic shall be installed where required.

### 3.02 ASSEMBLY

- A. All pipes shall be cut square and shall have burr and cutting slag removed by reaming or other cleaning methods.
- B. Unions or flanges shall be used at all connections to all equipment to facilitate dismantling, and elsewhere as required, in the erection of pipe or installation of valves.
- C. All joints and changes of direction shall be made with standard fittings. Bending of pipe will be permitted providing a hydraulic bender is used and pipe is not deformed reducing cross sectional area. Reducers shall be used at pipe size changes.
- D. To prevent electrolysis or corrosion, an insulating dielectric union or fitting shall be used between dissimilar metal fitting and/or pipe. Paper is not acceptable as a dielectrical insulator. Provide an approved insulating method on all underground metallic pipe in contact with dissimilar metals.
- E. Nipples shall be of same material and composition as pipe on which they are installed, and shall be extra heavy when unthreaded shoulder is less than 1-1/2". No running thread nipples will be permitted. Minimum exposed shoulder of any nipple shall not be less than 3/4".
- F. Joints between steel or copper pipe and cast iron shall be made with caulking ferrules.
- G. Cast iron soil pipe and fittings shall be assembled with approved molded push-on type gaskets. Local code approved no hub pipe may be used above grade where applicable.
- H. Galvanized steel pipe shall be assembled with galvanized screwed fittings.
- I. Black steel pipe shall be assembled with screwed or welded fittings. Grooved type mechanical pipe couplings and fittings equal to that manufactured by Victaulic may be used. Weld-O-Let or Thread-O-Let fittings may be used where branch outlet is at least one pipe size smaller than the main. All piping below grade shall be welded.
- J. Copper pipe shall be assembled with wrought copper fittings. All joints shall be made

with "SIL-FOS". Pipe, fittings and faucets used for domestic water shall be NSF 61 compliant.

### 3.03 SUPPORTS

- A. Provide an adequate pipe suspension system in accordance with recognized engineering practices, using, where possible, standard, commercially accepted pipe hangers and accessories. No piping shall be supported by, of from, hangers, supporting electrical conduit.

### 3.04 EXPANSION LOOPS

- A. Provide pipe anchors and pipe guides, and install in accordance with manufacturer's recommendations. Loop joints shall be same as specified for piping system.

### 3.05 TESTING

- A. Test all piping systems provided under this Contract as hereinafter specified and furnish to the Architect-Engineer copies of the test reports signed by the Contractor.
- B. Piping located underground shall be tested and inspected by the governing agency before backfilling.
- C. Equipment and personnel required for these tests shall be furnished without additional cost. Testing equipment shall be as required for particular test, with all equipment and gages accurate and in good working order.
- D. Equipment subject to damage at given test pressure shall be removed from line before pressure is applied. Use proper plugs or caps.
- E. See specific piping system specification for test pressure, duration and medium.

### 3.06 FLEXIBLE PIPE CONNECTORS

- A. Install flexible pipe connectors where shown on the Drawings and as required by other sections.
- B. Install connectors as close as possible to equipment inlets and outlets.
- C. Support pipe work independently of flexible connectors. Brace and anchor piping as required to prevent movement of piping ends of flexible connectors and align all equipment, pipe work, and flanges so that no flexible connectors shall be misaligned and/or stressed beyond the manufacturer's recommended limits.

END OF SECTION 15100

## SECTION 15120 - VALVES

### PART 1 – GENERAL

#### 1.01 SUMMARY

- A. Valves specified in this section are for general use. See Specifications for specific system for special valves.

#### 1.02 SUBMITTALS

- A. Submit brochures and other data for approval of all items specified.

### PART 2 – PRODUCTS

#### 2.01 GATE VALVES

- A. 1/2" THROUGH 2": Watts B3000 bronze, gate valve, threaded bonnet, non-rising stem, solid wedge disc, 125 psi WSP, 200 psi WOG, screwed ends.
- B. 2½" AND LARGER: Watts 405-NRS-RW, cast iron body, bolted bonnet, resilient wedge, bronze trim 125 psi WSP, 200 psi WOG, flanged ends.

#### 2.02 GLOBE VALVES

- A. 1/2" THROUGH 3": Watts B4000, threaded bonnet, rising stem, bronze disc, 125 psi WSP, 200 psi WOG, screwed ends.

#### 2.03 SWING CHECK VALVES

- A. 1/2" THROUGH 2": Watts B5000, threaded cap, bronze disc, horizontal swing, 125 psi WSP, 200 psi WOG, screwed ends.
- B. 2½" AND LARGER: Watts F511, cast iron body, bronze trim, bolted cover, 125 psi WSP, 200 psi WOG, flanged ends.

#### 2.04 BUTTERFLY VALVES

- A. 2½" THROUGH 6: Watts BF03-121-15 lug style, cast iron body, aluminum bronze pinned disc, stainless steel shaft, lever handle, pressure 200 psi WOG.
- B. 8" THROUGH 12": Watts BF03-121-1G lug style, same as 2 ½" through 6" butterfly valve except with gear operator, pressure 200 psi WOG.

#### 2.05 BALL VALVES

- A. 1/2" THROUGH 2": Watts B6800, three piece forged brass, full port, screwed ends.

- B. 2½" THROUGH 4". Watts G4000, cast iron full port, flanged ends 125 WSP.

#### 2.06 BALANCING VALVES

- A. ½" THROUGH 2": Watts WSM-81, flow measurement valve with bronze and balancing ports, screwed ends. (Domestic water only).
- B. 2½" THROUGH 3": Watts WSM-81, flow measurement valve with cast iron body and balancing ports, flanged ends. (Domestic water only).

#### 2.07 SPRING CHECK VALVES

- A. ½" THROUGH 2": Watts No. 600, bronze silent check, treaded end, 400 psi WOG.
- B. 2½" AND LARGER: Watts ICV-125: Standard ASTM A216 cast iron body with aluminum-bronze disc plates with PTFE bearings and 316 stainless steel springs, 200 psi CWP (non-shock), and silent check valve.

### PART 3 – EXECUTION

#### 3.01 JOB CONDITIONS

- A. Valves specified under specific systems shall take precedence over those as specified herein.
- B. Valves in copper pipe shall have threaded ends (except where size dictates flanged ends), use copper to MPT adapters.
- C. The use of threaded ends or flanged ends is the Contractor's option within the size listed.

#### 3.02 ARRANGEMENTS OR LOCATIONS

- A. Valves shall be located in an accessible position or made accessible through access panels. Refer to Section 15100 for access panels.
- B. Where several valves are related as to function, they shall be grouped in a battery.
- C. No valve shall be installed with stem below horizontal position without prior approval.
- D. Provide special handles or operators as might be required or as indicated on the drawings.

END OF SECTION 15120



## SECTION 15130 - PIPING SPECIALTIES

### PART 1 – GENERAL

#### 1.01 SUMMARY

- A. Specific requirements for specialties indicated on drawings or in other Sections of these specifications shall take precedence over items as specified in this section.

#### 1.02 SUBMITTALS

- A. Submit brochures and other supportive data as might be required for approval of all items differing from those specified.

#### 1.03 QUALITY ASSURANCE

- A. Ranges for thermometer, gages or similar instruments shall be selected so that normal operation will be near center of scale. Range shall not be longer than required. Use compound gage where vacuum may be encountered.
- B. Combination instruments for thermometers and gages will not be acceptable.

### PART 2 – PRODUCTS

#### 2.01 THERMOMETERS

- A. Thermometers shall be equal to Trerice Series Bx9, 9", adjustable type. Stem length shall be a minimum of 3/4 of the pipe diameter, plus socket extension length. Use 12" stem length in tanks.
- B. Provide brass separable sockets. For insulation, separable socket shall have extension neck.

#### 2.02 THERMOMETER WELLS

- A. Thermometer wells shall be brass with cap and chain.
- B. For uninsulated pipe, wells shall be Trerice No. 5571, 5573 or 5578.
- C. For insulated pipe, wells shall be Trerice No. 5574 or 5579.
- D. Use maximum stem length compatible with pipe size.

#### 2.03 GAGES

- A. Gages shall be equal to Trerice Series 800, 3-1/2" size.
- B. Provide snubber and cock for each gage.

- C. Provide coil siphon and cock for each steam gage.

#### 2.04 TEST PLUGS

- A. Test plugs shall be equal to Peterson Engineering Company #110, 1/4" size, with brass body, dust cap and "Nordel" valve core material.
- B. Provide Test Kit composing of one 3-1/2" gage (0-100 psi Range); one 3-1/2" gage (30" Vac to 150 psi Range ); one dial thermometer with 5" stem, two gage adapters and padded carrying case.

#### 2.05 STRAINERS

- A. "Y" Type:
  - 1. 1/2" THROUGH 3": Muessco No. 11, iron body, 250-lb SWP, 400-lb WOG, Monel or stainless steel screen, blow-off outlet, screwed ends.
  - 2. 2" THROUGH 12": Muessco No. 751, iron body, 125-lb SWP, 175-lb WOG, brass screen, blow-off outlet, flanged ends.
- B. BASKET TYPE: Muessco No. 155, cast iron: through 4", 60-lb WOG; 5" through 10", 40-lb WOG; 12" and larger, 150-lb WOG; brass screen, drain connection, flanged ends.
- C. SCREENS - STEAM:
  - 1. Monel or stainless steel
  - 2. Perforations: .057 diameter, 144 per sq. in.
- D. SCREENS - WATER:
  - 1. Brass
  - 2. Perforations: Up to 2", 1/10" diameter, 49 per sq. in.; 2-1/2" to 4", 1/8" diameter, 32 per sq. in.; 5" Up, 1/4" diameter, 8 per sq. in.

#### 2.06 AUTOMATIC FLOW CONTROL VALVES

- A. Flow control valves shall be tamperproof, factory calibrated, automatic pressure compensating type. Each valve shall limit flow rates within a range of +5%, regardless of system pressure fluctuations. Valve body material shall be suitable for the designed system piping requirements, with internal working parts of passivated stainless steel construction. Each valve to be provided with a metal tag, chain, and stamped for system identification. Provide nipples and quick disconnect valves for connection of flow measuring instrumentation. All hydronic system flow control valves shall be of one manufacturer. Quantities and flow capacities are to be as indicated on the drawings. Flow control valves shall be as manufactured by Griswold Controls, Santa Ana, CA.
- B. Furnish portable flow measuring apparatus, complete with carrying case, pressure gage, 3-way valve, hoses and connections. Unit to be compatible with automatic flow control valves to indicate pressure differential to determine flow rate through the valve.

### PART 3 – EXECUTION

BRANHAM & LLOYD, LLC  
PROJECT NO. 10033

GERMANTOWN POLICE DEPARTMENT  
MARCH 2011

### 3.01 GAGES, THERMOMETERS AND TEST PLUGS

- A. Provide thermometers in inlet and outlet piping at each Air Handling Unit, at chiller, hot water at boiler, and elsewhere as indicated on Drawings.
- B. Arrange thermometers so they might be read standing in a normal position of the floor.
- C. Provide test plugs on inlet and outlet piping of all heat exchange equipment. This includes all heating and cooling coils in air-handling units and fan coil units.
- D. Locate thermometers and test plugs as close as possible to equipment being monitored.

END OF SECTION 15130

## SECTION 15230 - MECHANICAL IDENTIFICATION

### PART 1 – GENERAL

#### 1.01 PIPE IDENTIFICATION

- A. All piping in mechanical spaces, in unfinished space, and above lift out ceilings, shall be identified with pressure-sensitive pipe markers with color bands of the proper size. Markers shall have proper legend and meet OSHA Specifications and the latest requirements of ANSI A13.1. Where pipes are too small for such application, a 1-1/2" brass tag shall be used. Do not identify exposed piping in the finished areas.
- B. Markers shall be applied to the piping at the following locations:
  - 1. Adjacent to each valve.
  - 2. At each branch and riser take-off.
  - 3. At each pipe passage through wall, floor and ceiling construction.
  - 4. At each pipe passage to underground.
  - 5. At not more than 40'-0" spacing on straight pipe runs.
- C. Markers shall be placed so as to be easily read. Arrows shall be applied to indicate direction of flow.

#### 1.02 DAMPER, VALVE AND EQUIPMENT IDENTIFICATION

- A. Provide brass tags for all valves with legend describing function of each valve. Tag shall also indicate normally open or normally closed.
- B. Provide nameplates for all mechanical equipment.
- C. Provide damper tags on each balancing damper located in Ventilating (Indoor Air Quality) Air System.

### PART 2 – PRODUCTS

#### 2.01 VALVE TAGS

- A. Brass tags shall be minimum of 2" diameter to accommodate 1/2" high numbers and 1/4" high letters. Tag shall be equipped with a brass chain, monel meter seal, or brass "S" hook.

#### 2.02 PIPE MARKERS & BANDS

- A. Markers and band sizes shall conform to the following:

<u>OUTSIDE DIAMETER OF PIPE OR INSULATION</u>	<u>LENGTH OF COLOR FIELD</u>	<u>LETTERING HEIGHT</u>
3/4" to 1-1/4"	8"	1/2"
1-1/2" to 2"	8"	3/4"

2-1/2" to 6"

12"

1-1/4"

- B. Marker and band colors, and marker legends shall conform to the following.

<u>PIPING SYSTEM</u>	<u>LEGEND</u>	<u>BAND/LETTER COLOR</u>
1. CHILLED WATER PIPING SYSTEM		
Chilled Water Supply	Cooling Supply	Green/White
Chilled Water Return	Cooling Return	Green/White

- C. Arrows shall be of same color as bands and shall be point in direction of flow, and indicate normal working pressure.
- D. Damper tags and equipment nameplates shall be white on black laminated plastic.

### PART 3 – EXECUTION

#### 3.01 INSTALLATION

- A. Legends shall be securely fixed to the pipes with full circumference bands on each side of legend. Arrow downstream of legend shall have a full circumference band at the arrow end.
- B. Valve tags shall be numbered in accordance with a valve chart, which shall be framed and mounted where directed by Architect-Engineer. Said chart shall describe valve location and function.
- C. Equipment nameplates shall be labeled the same as shown on the contract documents and shall be securely attached to the equipment.

END OF SECTION 15230

## SECTION 15250 - MECHANICAL SYSTEMS INSULATION

### PART 1 – GENERAL

#### 1.01 SUMMARY

A. Work Includes:

1. Furnish and install all insulation for HVAC piping, duct and equipment and for plumbing piping. Insulation shall comply with the energy code as a minimum unless specified below.

#### 1.02 QUALITY ASSURANCE

- A. Insulation specified is intended to set a standard. Insulation by other manufacturers will be considered provided that characteristics meet or exceed specified material. Each substitute item shall be submitted for approval.
- B. Specifications apply to all ductwork except exhaust unless specifically specified or indicated otherwise. See the drawings for additional specific requirements. Insulation may also be required for certain exhaust ducts when indicated on the drawings or in these specifications.
- C. Insulating materials shall comply with flame spread, smoke developed, and other applicable requirements of local and state Fire Codes and NFPA 90A, UL 723 or ASTM E-84. Before applying any insulation, submit satisfactory evidence of this compliance.
- D. It is the intent of this Section of the Specifications that all cold surfaces subject to "sweating" shall be insulated and have a vapor barrier applied
- E. Installer Qualifications: Insulation contractor installing this insulation system must be experienced with similar type systems and products.
- F. Furnish insulation thickness in excess of that specified herein if so indicated on the drawings.

### PART 2 – PRODUCTS

#### 2.01 HVAC PIPING AND VESSELS

A. CHILLED WATER PIPING:

Acceptable Manufacturers: The Dow Chemical Company/ Duna USA

1. Products: Rigid Polyisocyanurate Insulation fabricated to shape from bun stock, 1 ½" thickness.
  - a. TRYMER 2000 Rigid Polyisocyanurate Insulation
  - b. DUNA Corafoam C20

2. Product Testing:
  - a. Product shall meet the requirements of ASTM C591, type IV except as noted below.
  - b. Product has a thermal Conductivity of 0.19 btu-in/hr-ft<sup>2</sup>-°F or lower at 75°F. Product shall have a flame spread/smoke generation performance tested via method ASTM E-84, UL 723, or NFPA 255 of **25/50** or better at thicknesses of 1.5 inches or less. Flame spread/smoke generation performance of the insulation product shall be established through the presence of a third party certification and listing program involving product testing and periodic follow-up inspections.
3. Vapor retarder shall be Saran Vapor Retarder Film or ALPHA Associates Mylar-Aluminum-Mylar. **No ASJ shall be used for below ambient conditions.** Acceptable Manufacturer: The Dow Chemical Company
  - a. Products: Saran PVDC Vapor Retarder in the form of either film or adhesive tape.
    - 1) Saran 520 Vapor Retarder Tape
    - 2) Saran 540 Vapor Retarder Film
    - 3) Saran 560 Vapor Retarder Film (underground installation)
  - b. Product Testing:
    - 1) Saran 520 Vapor Retarder Film  
Film Thickness: 2 mils +/- 20%  
Maximum film permeance: 0.03 perms  
Color: White
    - 2) Saran 540 Vapor Retarder Film  
Film Thickness: 4 mils +/- 20%  
Maximum film permeance: 0.02 perms  
Color: White
    - 3) Saran 560 Vapor Retarder Film  
Film Thickness: 6 mils +/- 20%  
Maximum film permeance: 0.01 perms  
Color: White

## 2.02 HVAC DUCTWORK

- A. RECTANGULAR DUCTWORK (MAX. DIMENSION 30"): Owens-Corning or Knauf 2" thick fiberglass duct wrap with factory-applied flame-retardant foil-reinforced Facing (FRK/FSK), 3/4 lb. Density. Use semi-rigid insulation for ductwork in finished spaces and for exposed ducts within eight (8) feet of the floor. Ductwork shall be both internally and externally insulated when indicated on the drawings. See paragraph "D" below for ducts exposed in equipment rooms and ducts with maximum dimension greater than 30".
- B. ROUND AND OVAL DUCT WORK: Owens-Corning or Knauf 2" thick (3" thick in attics) fiberglass faced duct wrap with factory-applied flame-retardant foil-reinforced Facing (FRK/FSK) 0.75 PCF density. For exposed ductwork within eight (8) feet of the

floor, cover with aluminum jacket same as specified for ductwork exposed to weather; delete weather-proofing.

- C. RECTANGULAR DUCTWORK (INTERNALLY LINED): Refer to Section 15800 and the drawings for requirements.
- D. RECTANGULAR DUCT WORK (MAX. DIMENSION GREATER THAN 30", AND DUCTWORK EXPOSED IN EQUIPMENT ROOMS UP TO 8'-0" ABOVE THE FLOOR): Owens-Corning or Knauf 2" with foil scrim kraft (FSK) semi-rigid duct insulation having a minimum density of 3.0 PCF. Ductwork shall be both internally and externally insulated when indicated on the drawings.

### PART 3 – EXECUTION

#### 3.01 GENERAL

- A. The application of all insulation shall be performed by experienced mechanics, regularly employed in the trade, in a neat and workmanlike manner. Unless otherwise specified to a greater quality, the application of all insulation shall be in accordance with the manufacturer's recommendations.
- B. Omit insulation from the following items:
  - 1. Exposed plated plumbing pipe.
  - 2. Pipe vents to atmosphere, discharge from safety and relief valves, overflow pipes, and hot only drain pipes.
  - 3. Valves, Unions, Flanges, Traps, Strainers, and devices in HOT ONLY piping.
  - 4. Supply duct liner in ducts serving kitchen and range hood make-up air.
  - 5. Return air ductwork fully exposed in a fully conditioned space, return air plenums not included.
- C. Provide semi-circular protection saddles of #16-gage galvanized steel, 12" long, for insulated piping where hangers occur. On pipe sizes 2" and over, provide 12" length of foam-glass insulation at hangers.
- D. Insulation facings shall be acceptable to NFPA Standards 90A and 90B and ASTM C1136.
- E. All exposed ends of pipe insulation shall be pointed up neatly with appropriate insulating cement, or use premolded PVC end caps on cold only piping and preformed aluminum end caps on dual-temp, hot or steam piping.
- F. Piping systems shall be tested and cleaned before insulation is applied.

#### 3.02 POLYISOCYANURATE INSULATION

- A. All insulation shall be tightly butted and free of voids and gaps. Vapor Retarder shall be continuous. All fasteners and bands shall be neatly aligned and overall work must be of high quality appearance and workmanship. Systems, staples, rivets, screws and other fasteners capable of penetrating the vapor retarder shall not be used.



- B. Install pre-fabricated insulation fittings on elbows, tees, and valves. Insulation at fittings shall be the same type and thickness as on straight pipe sections.
- C. Lap joint of vapor retarder to be sealed using SSL tape, Saran 520 Tape. Vapor retarder butt joints shall be covered with Saran Vapor Retarder Tape. Vapor retarder butt joints shall be covered with a single layer of Saran 520 Tape. Elbows and fittings shall be wrapped with Saran 520 Vapor Retarder Tape in a spiral fashion. Use a minimum amount of overlap between successive courses of spiral wrapped Saran 520 Tape.
- D. When Saran vapor retarder film and tape are used, and when the pipe size is 4" in diameter or greater, a 1"-wide or greater Saran 520 tape with a 25% (1-1/4 wraps) circumferential overlap shall be wrapped around the outside of the Saran vapor retarder on 18" centers.

### 3.02 FIBER GLASS DUCT WRAP TYPE INSULATION

- A. To be used on round or oval duct or only on rectangular duct with a maximum dimension less than 30."

Adhere insulation to duct surface with approved adhesive applied in strips approximately 4" wide on approximate 8" centers. In addition, secure insulation to the bottom and/or sides of rectangular duct work with a dimension of 24" and above with mechanical fasteners at not more than 18" on center. Butt circumferential edges of insulation and seal joints with staples at 6" o.c., adhering the flange over each joint, and seam for lap of longitudinal joints. Tape all joints and punctures with 3" wide foil reinforced Kraft tape.

### 3.03 ARMAFLEX PIPE INSULATION

- A. Apply in accordance with latest edition of Armstrong's "INSTALLATION INSTRUCTIONS TO THE CONTRACTOR." Apply two coats of Armstrong's WB Vinyl Finish with color selected by engineer.

### 3.04 SHEET ARMAFLEX

- A. Apply in accordance with latest edition of Armstrong's "INSTALLATION INSTRUCTIONS TO THE CONTRACTOR." Apply two coats of Armstrong's WB Vinyl Finish with color selected by engineer.

END OF SECTION 15250

SECTION 15270A - HVAC, TESTING, BALANCING  
AND ADJUSTING (Air and Water Systems)

PART 1 – GENERAL

1.01 SUMMARY

- A. Section Includes:
  - 1. Air and Water Balance: A complete air and water balance of this project will be required as specified in sections herein.
  - 2. Test only new Air Handling Units (air and water).
  - 3. Prepare a TEST REPORT: Submit test results, deficiency report, and recommendations.
  - 4. Retest selected items as required to verify the test report accuracy.

1.02 QUALITY ASSURANCE

- A. The testing, balancing, and adjusting can be performed by installing contractor.

PART 2 – EQUIPMENT

2.01 INSTRUMENTS

- A. The Testing Agent shall own all the instruments, gages, thermometers, etc. necessary to properly do the work. These instruments shall include the following:
  - 1. Tachometer, Stroboscope, Pyrometer, Ammeter, Manometer, Anemometer, Magnehelic gages, Psychrometer, Orsat, and Velometer.

2.02 CALIBRATION

- A. All instruments shall have been recalibrated within 180 days of the performance of work. Certificates verifying the performance of calibration work shall be submitted to this Engineer with the final report.

PART 3 – EXECUTION

3.03 PREPARATION PHASE I - JOB VISITS

- A. The agent shall make at least two visits to the project site during construction. The purpose of these visits are to ensure that all required test points, balancing dampers, flow measuring devices, etc., are being properly installed. The Agent shall report to the Engineer and Contractor any and all discrepancies he may find during each visit. The Testing and Balancing Agent shall be given access to the project site at all times.

3.04 PROCEDURE PHASE II - TEST AND BALANCE AIR SYSTEMS

- A. The Air Balance Agency shall perform the following tests and balance system in accordance with the following requirements:
1. Test and adjust blower RPM to design requirements.
  2. Test and record motor full load amperes.
  3. Make pitot tube traverse of main supply ducts and at each ventilating air duct runout and obtain design cfm at fans and at ventilating air duct runouts to meet Indoor Air Quality requirements.
  4. Make pitot tube traverse of ventilating air runout ducts and balance to scheduled CFM values.
  5. Test and record system static pressures, suction and discharge.
  6. Test and adjust system for design recirculated air, cfm.
  7. Test and adjust system for design cfm outside air. (At both minimum and maximum supply air.)
  8. Test and record entering air temperatures. (DB heating and cooling.)
  9. Test and record entering air temperatures. (WB cooling.)
  10. Test and record leaving air temperatures. (DB heating and cooling.)
  11. Test and record leaving air temperatures. (WB cooling.)
  12. Adjust all main supply and return air ducts to proper design cfm.
  13. Adjust all zones to proper design cfm, supply and return.
  14. The Contractor shall make any replacements of the pulleys, belts, and dampers of the addition of dampers required for correct balance as recommended by Air Balance Agency, at no additional cost to the Owner.
  15. The balancing engineer shall prepare the water systems for balancing in the following manner. Work shall include all specialized cold rooms, photographic equipment and laboratory process equipment and heat exchangers, as applicable.
    - a. Open all valves to full open position. Close coil bypass stop valves, where applicable.
    - b. Check pump rotation.
    - c. Check expansion tanks to determine that they are not air bound and the system is completely full of water.
    - d. Check all air vents at high points of water systems and determine that all are installed and operating freely.
    - e. Set all temperature controls so all coils are calling for full cooling.
    - f. Check operation of automatic control valve.
    - g. Check and set operating temperatures of boilers and chillers to design requirements.

### 3.05 PROCEDURE - PHASE III TEST AND BALANCE EQUIPMENT

- A. Check leaving water temperatures and return water temperatures. Reset to correct design temperatures.
- B. Check water temperatures at inlet side and leaving side of coils. Note rise or drop of temperatures from source.
- C. Proceed to balance each coil.
- D. Upon completion of flow readings and adjustments at coils, mark all settings and record data.

3.06 PROCEDURE - PHASE IV - CONCLUSIONS AND RECOMMENDATIONS

- A. After the above phases are completed, the Project Engineer supervising the Testing and Balancing shall analyze the data and forward to the Architect-Engineer and Contractor a report of all tests performed, including deficiencies and recommendations and verification of controls operation and sequences.

END OF SECTION 15270A

## SECTION 15530 - HVAC CONTROLS

### PART 1 - GENERAL

#### 1.1 SCOPE

- A. This work includes all material, equipment, and appurtenant accessories necessary for or incidental to the installation of a Building Automation System (BAS) associated with the replacement air handling units. The BAS shall be an extension of the existing system installed in the City of Germantown Municipal Center – 1930 S. Germantown Pkwy – Germantown, TN 38138
- B. The system shall use BacNet as its native protocol but shall also communicate via BACnet and/or Modbus as required. System components shall be certified by LONMARK® and display the LONMARK® logo where applicable. System components that do not have a LONMARK® profile shall be compatible with the LONMARK® standards. For each LonWorks device that does not have LonMark certification, the device supplier must provide DRF and XIF files for the device.
- C. The BAS shall be capable of integrating with existing AHU controls located in the Finance Department over a secure Intranet within the building or by remote access by a standard Web Browser over the Internet.
- D. The BAS shall be capable of communicating to third party systems such as chillers, boilers, air handling systems, energy metering systems, other energy management systems, access control systems, and other building management related devices with open, interoperable communication capabilities.
- E. All materials and equipment used shall be standard components, regularly manufactured for this and/or other systems and not custom designed specifically for this project.
- F. Related work specified elsewhere
  - a. Power wiring
    - 1. All Power wiring for the local control panels shall be installed as part of this contract by a licensed electrical contractor.
- G. Control Wiring
  - a. All control and interlock wiring, 120 VAC and less, in connection with the automatic temperature control system shall be furnished and installed under this section.
  - b. All wiring shall be installed in EMT conduit except that plenum rated wire may be used in low voltage runs in concealed but accessible ceiling areas only.

#### 1.2 DRAWINGS AND SUBMITTALS

BRANHAM & LLOYD, LLC  
PROJECT NO. 10033

GERMANTOWN POLICE DEPARTMENT  
MARCH 2011

- A. The controls contractor shall provide to the consulting engineer complete schematic drawings for the entire control system to be submitted to the owner for approval before work shall begin. This submittal shall be provided under this division and include all control components and machinery actually purchased and installed for the project. Bulletins describing each item of control equipment or component shall be included. Upon completion of his work, the controls contractor shall provide final sets of description of operation and schematic drawings of the control system for distribution to the owner. Control wiring diagrams must show all temperature controls, start-stop arrangement for each piece of equipment, equipment interlocks, and any special connection information required for properly controlling the mechanical equipment.

### 1.3 INSTRUCTION AND ADJUSTMENT

- A. On completion of the job, the controls contractor shall have completely adjusted the entire control system. He shall arrange to instruct the owner's representative on operation of the control system for a period of not less than eight (8) hours a day for two (2) days.
- B. Record drawings: At completion of the job, the controls contractor shall furnish copies of corrected wiring diagrams enclosed in laminated plastic and mounted on the wall of the main mechanical room or as directed.
- C. Contractor adjustment: On the completion of the job, the controls contractor must demonstrate to the owner that final calibrations and adjustments to the system are accurate and that the owner's operating personnel have been instructed in its use.

### 1.4 GUARANTEE

- A. The control system designated on drawings and plans and herein specified shall be guaranteed to be free from original defects in both material and workmanship for a period of one (1) year of normal use and service. Damages arising from other uses shall be deemed the responsibility of the system owner. This guarantee shall become effective starting the date the owner accepts the system.

## PART 2 - CONTROL EQUIPMENT

### 2.1 SENSORS

- A. Temperature Sensors: Temperature sensors shall be linear precision elements with ranges appropriate for each specific application. All ASC room sensors shall provide for direct connection and access to the BacNet network.
- B. Duct mounted averaging sensors shall utilize a sensing element incorporated in a copper capillary with a minimum length of 20 feet. The sensor shall be installed according to manufacture recommendation and looped and fastened at a minimum of every 36 inches.

- C. Sunshields shall be provided for outside air sensors.
- D. Humidity Sensors: Humidity sensors shall be of the solid-state type using a capacitance-sensing element. The sensor shall vary the output voltage with a change in relative humidity. Room humidity sensors shall have a minimum range of 10% to 90%  $\pm 5\%$ . Supply air humidity sensors shall have a range of 10% to 90%  $\pm 5\%$ .
- E. Pressure Sensors: The differential pressure sensor shall be temperature compensated and shall vary the output voltage with a change in differential pressure. Sensing range shall be suitable for the application with linearity of 1.5%

## 2.2 DAMPER ACTUATORS

- A. All damper actuator shall be re-used where applicable. Actuators requiring replacement shall be of the push-pull or rotary type for modulating, 3-point floating, or 2-position control as required by the application. The actuator shall use an overload-proof synchronous motor or an electric motor with end switches to de-energize the motor at the end of the stroke limits. Control voltage shall be 24 VAC, 0-20 VDC, or 4-20 ma as required. Actuators shall be provided with spring return to the normal position where shown. Actuators shall have a position indicator for external indication of damper position and a manual override capability, which operates without disconnecting damper linkage.

## 2.3 CONTROL VALVES

- A. All automatic control valves 2" and smaller shall be screwed type, and valves 2-1/2" and larger shall be flanged. Valves shall be ANSI-rated to have a dynamic body differential pressure rating of 1.5 times the design pump head. Valve bodies shall be minimum 125 psig rated. Valve actuators shall be sized to close against 1.5 times the pump head. Valves shall be ANSI-rated to withstand the temperatures encountered.
- B. Air Handling Units  
Valves used for control of hot water and chilled water shall be of the modulating magnetic type with a rangeability of at least 500 to 1. Valves shall have a true linear flow characteristic in relation to valve opening. Valve body shall be cast iron; seat and inner valve material shall be chrome nickel steel. Valve sizes 2-inches and smaller shall be screwed and supplied with union fittings. Valve sizes 2.5-inches and larger shall be flanged. Valves shall be of the three-way or straight through type as required by the sequence or shown on the mechanical drawings. Valve shall be equipped with handwheel to allow manual positioning of valve in the absence of control power. Valves shall be of the spring-return type that will return to their normal position in the absence of control power. All control valves for roof mounted air handling units shall be configured for fail safe operation via spring return actuator and normally open piping of the valve to allow full flow through the coil upon loss of power to the valve actuator.
- C. Control valves utilizing damper-type actuators that have been mechanically connected to globe or ball valves will not be accepted.

## 2.4 APPLICATION SPECIFIC CONTROLLER

- A. Each Application Specific Controller (ASC) shall operate as a stand-alone controller capable of performing its specified control responsibilities independent of other controllers in the network. Each ASC shall be a minimum 16-BIT microprocessor based, multi-tasking, multi-user, real time digital control processor.
- B. Each ASC's application must comply with one of the following LONMARK® interoperability profile or BACnet Compliant guidelines:
  - 1. Fan Coil Units and Roof Top Units
- C. Network access shall be accomplished at the ASC room sensor or the ASC. System node access shall be available from connecting to the room sensor jack. Systems that do not have a system access jack from the room sensor shall provide a dedicated network jack next to each room sensor.
- D. Controllers shall include all inputs and outputs necessary to perform the specified control sequences. Analog and digital outputs shall be industry standard signals such as 0-10V and 3-point floating control allowing for interface to a variety of industry standard modulating actuators. The ASC inputs and outputs shall consist of industry standards types. Inputs shall be electrically isolated from outputs, communications and power. All inputs shall be provided with an auto-calibrate function to eliminate sensing errors.
- E. All controller sequences and operation shall provide closed loop control of the intended application. Closing control loops over the network is not acceptable.
- F. The ASC must be mounted remotely from the room sensor. ASC's, that are wall mounted with integral room sensors, are not acceptable.
- G. The control program shall reside in the ASC. The application program configuration information shall be stored in non-volatile memory with no battery backup.
- H. After a power failure the ASC must run the control application using the current setpoints and configuration. Reverting to default or factory setpoints are not acceptable.
- I. The ASC controller shall have the following minimum capabilities:
  - 1. DDC Control
  - 2. Heating/Cooling Setpoints
  - 3. Occupied & Unoccupied Setpoint Pairs
  - 4. Hydronic/DX Cooling
  - 5. Electric, Hydronic and Gas heat
  - 6. Perimeter Heat Control
  - 7. Single Speed, Multi-Speed, or Proportional Speed Fan Control
  - 8. Two-Position or ASHRAE Cycle II Economizer
  - 9. Auto-Calibrate
  - 10. Lighting Control



11. Off-Hours Tenant Override
12. Remote Setpoint Adjust

## 2.5 NETWORK AREA CONTROLLER

- A. The Network Area Controller (NAC) shall provide the interface between the field control devices, and provide global supervisory control functions over the control devices connected to the NAC. It shall be capable of executing application control programs to provide:
  1. Calendar functions
  2. Scheduling
  3. Trending
  4. Alarm monitoring and routing
  5. Time synchronization
  6. Integration of LonWorks controller data
  7. Network Management functions for all LonWorks based devices
- B. The NAC shall provide multiple, concurrent user access to the system and support for ODBC or SQL. A database resident on the NAC shall be an ODBC-compliant database or must provide an ODBC data access mechanism to read and write data stored within it.
- C. The NAC shall support standard Web browser access via the Intranet/Internet. It shall support a minimum of 16 simultaneous users.
  - D. The NAC shall provide alarm recognition, storage; routing, management, and analysis to supplement distributed capabilities of equipment or application specific controllers.
  - E. Alarms shall be annunciated in any of the following manners as user defined:
    - a. Screen message text
    1. Email of the complete alarm message to multiple recipients. Provide the ability to route and email alarms based on:
      - a. Day of week
      - b. Time of day
      - c. Recipient
    2. Pagers via paging services that initiate a page on receipt of email message
    3. Graphic with flashing alarm object(s)
    4. Printed message, routed directly to a dedicated alarm printer
  - F. The following shall be recorded by the NAC for each alarm (at a minimum):
    1. Time and date
    2. Location (building, floor, zone, office number, etc.)
    3. Equipment (air handler #, accessway, etc.)
    4. Acknowledge time, date, and user who issued acknowledgement.
    5. Number of occurrences since last acknowledgement.
  - G. Defined users shall be given proper access to acknowledge any alarm, or specific types or

classes of alarms defined by the user.

- H. A log of all alarms shall be maintained by the NAC and/or a server (if configured in the system) and shall be available for review by the user.
- I. Provide a “query” feature to allow review of specific alarms by user defined parameters.
- J. A separate log for system alerts (controller failures, network failures, etc.) shall be provided and available for review by the user.
- K. An Error Log to record invalid property changes or commands shall be provided and available for review by the user.
- L. Data Collection and Storage
  - 1. The NAC shall have the ability to collect data for any property of any object and store this data for future use.
  - 2. The data collection shall be performed by log objects, resident in the NAC that shall have, at a minimum, the following configurable properties:
    - a. Designating the log as interval or deviation.
    - b. For interval logs, the object shall be configured for time of day, day of week and the sample collection interval.
    - c. For deviation logs, the object shall be configured for the deviation of a variable to a fixed value. This value, when reached, will initiate logging of the object.
    - d. For all logs, provide the ability to set the maximum number of data stores for the log and to set whether the log will stop collecting when full, or rollover the data on a first-in, first-out basis.
    - e. Each log shall have the ability to have its data cleared on a time-based event or by a user-defined event or action.
  - 3. All log data shall be stored in a relational database in the NAC and the data shall be accessed from a server (if the system is so configured) or a standard Web Browser.
  - 4. All log data, when accessed from a server, shall be capable of being manipulated using standard SQL statements.
  - 5. All log data shall be available to the user in the following data formats:
    - a. HTML
    - b. XML
    - c. Plain Text
    - d. Comma or tab separated value
  - 7. The NAC shall have the ability to archive its log data either locally (to itself), or remotely to a server or other NAC on the network. Provide the ability to configure the following archiving properties, at a minimum:
    - a. Archive on time of day

- b. Archive on user-defined number of data stores in the buffer (size)
  - c. Archive when buffer has reached it's user-defined capacity
- M. Provide and maintain an Audit Log that tracks all activities performed on the NAC. Provide the ability to specify a buffer size for the log and the ability to archive log based on time or when the log has reached its user-defined buffer size. Provide the ability to archive the log locally (to the NAC), to another NAC on the network, or to a server. For each log entry, provide the following data:
  - 1. Time and date
  - 2. User ID
  - 3. Change or activity: i.e., Change setpoint, add or delete objects, commands, etc.
- N. The NAC shall have the ability to automatically backup its database. The database shall be backed up based on a user-defined time interval.
  - 1. Copies of the current database and, at the most recently saved database shall be stored in the NAC. The age of the most recently saved database is dependent on the user-defined database save interval.
  - 2. The NAC database shall be stored, at a minimum, in XML format to allow for user viewing and editing, if desired. Other formats are acceptable as well, as long as XML format is supported.

## 2.6 SYSTEM WORKSTATION

- A. No system workstation will be provided for this project.
- B. Coordinate all connections to the building network system with the owners IT department.

## 2.7 MISCELLANEOUS

- A. This contractor shall furnish all electric relays and coordinate with the magnetic starters and auxiliary contact requirements necessary to accomplish the indicated or specified sequence and provide a properly operating automatic control system. All electric control devices shall be of a type to meet current, voltage, and switching requirements of their particular application.
- B. All relays, switches, transducers and other field interface devices, for equipment located within the mechanical equipment rooms, shall be panel mounted. Each local control panel shall have door mounted devices as shown on the drawings and have a 120 VAC convenience receptacle. All electrical devices within the panels shall be wired to a numbered terminal strip. All wiring within the panel shall be run in wiring tray in accordance with NEMA and UL standards, and shall meet all local codes. Panels shall be NEMA type suitable for applications as required. Each panel shall have a final as-built control drawing, reduced, laminated and mounted inside of the panel door.
- C. Proper fan shutdown interlock wiring to the existing smoke detectors shall be confirmed by this contractor.

- D. Current Sensing Relays: Current sensing relays shall be self-powered and shall have selectable AC ranges of 1-6 amps, 6-40 amps and 4-200 amps. The switch output contact shall be rated for 30 VDC, .15 amps. Threshold setting shall be fully adjustable within the selected range and response time shall be 0.25 seconds or less. Circular window within the current sensing switch shall accept #2 wire or smaller and the window shall be a minimum of 0.510 inches diameter. Housing material shall have UL listed flame retardant properties.

### PART 3 – GRAPHICS AND POINTS LIST

#### 3.1 NEW AIR HANDLING UNIT

POINT DESCRIPTION	POINT TYPE
Supply Fan Start/Stop	DO
Supply Fan Status	DI
Supply Fan Speed	AO
Supply Fan Amperage	AI
Supply Air Temperature	AI
Mixed Air Temperature	AI
Filter Status	AI
OSA Damper	AO
OSA Damper Position	AI
Return Air Damper	AO
Return Air Damper Position	AI
Chilled Water Valve	AO
Chilled Water Valve Status	AI
Supply Duct Static Pressure	AI
Supply Duct High Pressure	DI
Bldg Pressure	AI
Bldg Relief Damper	AO
Bldg Relief Damper Position	AI
Freezestat	DI
OSA Temperature	AI

END OF SECTION 15530

## SECTION 15600 - HVAC EQUIPMENT

### PART 1 – GENERAL

#### 1.01 SUMMARY

- A. Furnish and install all required equipment, appurtenances, combination starter-disconnects, motor starters, and accessories for a complete heating and/or cooling system. All equipment furnished for this project shall comply with applicable requirements of ASHRAE Standard 90.1 and ASHRAE Standard 62 latest issues. Disconnects and starter enclosures shall carry NEMA Class and Group as required by the application.
- B. See other sections of these specifications that may specify accessories or features.
- C. Refer to the schedules on the drawings where equipment capacities are not included in this section.
- D. Review other sections of the specifications and the plans for services required to each piece of mechanical equipment. Any required accessories, appurtenances, or service omitted from the plans or specifications that is not called to the attention of the Architect-Engineer at least 72 hours before bidding and corrected by addendum shall be provided as though shown.
- E. Motors required in connection with equipment shall be of sufficient size and speed for duty to be performed; not exceeding their full-rated load when driven equipment is operated at specified capacity under most severe conditions likely to be encountered. Motors shall also be compatible with variable frequency drives where specified and shall conform to NEMA standards for the application. See ENERGY POLICY ACT below.
- F. Belt drives shall be adjustable "V" Belt Type. Selection shall be based on 150% of the motor horsepower. Selection shall be factory-set so that specified capacity is a midpoint setting, allowing 20% overall speed adjustment. Motors shall be selected on 110% of the brake horsepower required with a service factor of 1. Motors and/or drives shall be changed if required to deliver specified CFM should static pressure differ from that specified due to excessive duct offsets and configuration in the opinion of the engineer.
- G. All exposed rotating machinery shall be equipped with guards.
- H. Submit all equipment for approval.
  - a. Air filters shall comply with unit manufacturers' recommendations.
- Q. Unless otherwise specified below, all air conditioning equipment shall comply with the following standards as a minimum:
  - 1. ASHRAE Handbook (HVAC Systems and Equipment)
  - 2. NFPA 90A (Installation of Air Conditioning and Ventilating Systems)

## PART 2 – PRODUCTS

### 2.01 AIR HANDLING UNIT (DOUBLE WALL CONSTRUCTION)

- A. Each unit shall be furnished with components as specified. All units and accessories shall be constructed of galvanized steel with solid double wall insulated construction. Insulation shall be two inch thick, 1-1/2 pound density, bonded, mat-faced insulation affixed with a waterproof adhesive. All insulation shall comply with NFPA 90. Units shall be certified in accordance with ARI Standard 430.
- B. Fan Section:
  - 1. Fan section shall have an access door on each side secured by quick-release latches. Hinges shall be of the slip joint type allowing easy removal of doors. All doors shall be gasketed.
  - 2. Fan sections shall be insulated as specified above. Fan shall be internally isolated with 2" spring isolators.
- C. Coil Section:
  - 1. Cooling coil sections shall be insulated as specified above.
  - 2. Horizontal unit arrangements shall be available with standard and long coil sections.
  - 3. Coil sections with coils higher than 42 inch finned height shall have an intermediate drain pan (between top and bottom coils) with plastic drain tubes extending into main drain pan.
  - 4. Standard and long coil sections shall have a removable panel on each side for easy coil access and removal with hinged and latched access door on return-bend side of coil section. Standard and long coil sections shall have a double drain pan with insulation between the inner and outer pan. The drain pan shall have welded corners and a 1-1/4 inch MPT drain connection on each side for positive draining.
- D. Blowers:
  - 1. Each unit shall contain one forward curved or Airfoil, double width, double inlet blower. Standard forward curved blowers through Size 14 are Class I.
  - 2. Blower wheels shall be statically and dynamically balanced before they are assembled and dynamically balanced after being installed in the fan section.
  - 3. Blowers shall be mounted on steel springs designed and selected for 2" deflection.
- E. Fan Shaft:
  - 1. Shafts shall be solid steel, continuous diameter, turned, ground and polished. Each shaft shall be coated with a non-hardening rust inhibitor.
  - 2. Shaft critical speed shall be at least 1.25 times the maximum operating speed.
- F. Bearings:
  - 1. Pillow block bearings shall be self-aligning, noise tested and have air conditioning fit, average bearing life shall be in excess of 200,000 hours.

2. Extended lube lines and grease fittings shall be furnished to each bearing to allow lubrication from outside the cabinet.
- G. Cooling Coils:
1. All coils shall be staggered tube design, have heavy wall copper headers, and die-formed plate type aluminum fins. Coil casings shall be constructed of 16 gauge galvanized steel.
  2. Water coils shall have steel MPT connections.
  3. All coils shall be submerged in water and leak tested with 400 PSIG dry nitrogen.
  4. All 5/8" tube chilled and hot water coils to be certified in accordance with ARI Standard 410.
  5. All coils shall have double wall, double pitch, IAQ type drain pans.
- H. Mixing Box:
1. Filter mixing box shall be furnished with angular filter section and have either top, back or bottom openings, or any combination of the three. Openings shall be furnished with airfoil parallel blade low leak dampers and jamb rails. Blade bearings shall be brass inserts and shall provide smooth operation and corrosion resistance. Mixing boxes shall have similar design, less filters.
  2. Section to have full access doors on each side with slip-joint hinges, quick-release latches and gasketing.
  3. Section shall be for filters indicated in Part 1 – General and as indicated. Filter velocities not to exceed recommended maximum face velocities.
- I. Drive:
1. Drive components shall be high quality statically balanced. Drives shall be designed to be a minimum of 1.20 times the rated motor horsepower.
  2. Fan shafts shall be mounted on self-aligning grease lubricated ball bearings designed for 200,000 hours average life.
- J. Motors:
1. Motors shall be mounted inside the blower section, on a heavy gauge steel channel.
  2. Motors shall be high-efficiency design.
- K. Furnish other sections and accessories as indicated on the drawings.

## PART 3 - EXECUTION

### 3.01 INSTALLATION

- A. The Contractor, prior to installing any equipment, shall examine the conditions under which the equipment is to be installed, and shall notify the Architect/Engineer of conditions detrimental to the proper installation of the equipment.
- B. Install all equipment in accordance with the manufacturer's latest written instructions, including clearances, and in accordance with governing codes and recognized industry standards and practices to insure that the equipment serves the intended function.

- C. Coordinate all work with other trades as necessary for proper interfacing.
- D. All equipment shall be protected from any form of damage. Any damaged equipment shall be replaced without additional cost to the Owner.

3.02 CONDENSATE DRAIN TRAPS

- A. Provide trapped condensate drains at all evaporators with depth as detailed and as recommended by equipment manufacturer. 1-1/4 inch and larger traps shall be constructed of tees with plugs for cleanouts. Coordinate with Drawings.

END OF SECTION 15600



## SECTION 15710 - HYDRONIC PIPING

### PART 1 – GENERAL

#### 1.01 SUMMARY

- A. Section Includes:
  - 1. Hydronic piping shall consist of all chilled water piping systems as shown on the drawings and specified herein.
  - 2. Systems shall be complete with valves, drains, air vents, and other specialty item as specified for complete and satisfactory operation.

### PART 2 – PRODUCTS

#### 2.01 PIPE AND FITTINGS

- A. GENERAL: Where more than one type of material is indicated, selection is the Contractor's option.
  - 1. 2" AND SMALLER: Black steel pipe, Schedule 40, class 125 malleable iron threaded fittings.
  - 2. 2-1/2" AND LARGER: Black steel pipe, Schedule 40, wrought steel butt weld fittings.
  - 4. 2-1/2" AND LARGER: Black steel pipe, Schedule 40, grooved fittings with mechanical grooved couplings.

### PART 3 – EXECUTION

#### 3.01 PIPING ARRANGEMENT

- A. See Section 15100.
- B. Provide manual air vents at each coil.
- C. Provide automatic air vents at high points on supply and return piping where accessible in mechanical rooms.
- D. Where high points on supply and return main occur outside of the mechanical rooms, or extremely high in mechanical rooms, provide air vents on supply and return piping by running copper tubing from high point to nearest accessible drain. Provide cocks in tubing near discharge.
- E. Provide a drain valve with hose connection at all low points.

#### 3.02 VALVES AND STRAINERS

- A. Valves used for service and isolation shall be gate or butterfly type. Through 2", ball valves may be used.

- B. Balancing valves shall be either Sarcoflow balancing fittings, lubricated plug cock, or butterfly valves.
- C. Where service or isolation and balancing is required, a butterfly or ball valve may service both. Provide memory stops for valves used for balancing.
- D. Check valves shall be spring type.
- E. Strainers shall be "Y" type.

### 3.03 BLACK STEEL PIPE ASSEMBLY

- A. Piping shall be installed with recognized industry standards.
- B. Welding shall be performed by welders certified by National Certified Pipe Welding Bureau in the past 6 months.

### 3.04 TEST

- A. Black Steel Piping: Test system with air to a pressure of 125 PSI for a period of two hours minimum, proving system tight with out the adding of air.
- B. Copies of test results, signed by the contractor, shall be furnished to the Engineer.

END OF SECTION 1571

## SECTION 15800 - HVAC SHEET METAL

### PART 1 – GENERAL

#### 1.01 SCOPE

- A. All low pressure duct work including return and outside air ductwork to complete the systems as shown on the drawings or specified herein. See Section 15820 for Medium/High Pressure ductwork.

#### 1.02 SUBMITTALS

- A. Submit the following:
  - 1. Damper hardware.
  - 2. Multi-blade dampers.
  - 3. Access doors.
  - 4. Duct Liner.
  - 5. And other specified equipment.

#### 1.03 REFERENCES

- A. ASHRAE – Handbook 2001 Fundamentals; Chapter 35 – Duct Design.
- B. ASHRAE – Handbook 2000 HVAC Systems and Equipment; Chapter 16 – Duct Construction.
- C. ASTM A 90 – Weight of Coating on Zinc-Coated (Galvanized) Iron or Steel Articles.
- D. SMACNA – HVAC Duct Construction Standards
- E. UL 181 – Factory-Made Air Ducts and Connectors.

#### 1.04 GOVERNING PUBLICATIONS AND AUTHORITIES

- A. ASHRAE Handbooks.
- B. SMACNA Standards.
- C. Underwriters Laboratories, Inc.
- D. NFPA Pamphlets
- E. NAIMA
- F. NADCA

## PART 2 – PRODUCTS

### 2.01 MATERIALS

- A. General: Non-combustible or conforming to requirements for Class 1 air duct materials, or UL 181.
- B. Steel Ducts: ASTM A525 or ASTM A527 galvanized steel sheet, lock-forming quality, having zinc coating of 1.25 oz per sq.ft. for each side in conformance with ASTM A90.
- C. Sealant: Non-hardening, water resistant, fire resistive, compatible with mating materials; liquid used alone or with tape, or heavy mastic.
- D. Hanger Rod: Steel, galvanized; threaded both ends, threaded one end, or continuously threaded.

### 2.02 LOW PRESSURE DUCT WORK

- A. Fabricate and support in accordance with SMACNA Duct Construction Standards and ASHRAE handbooks, except as indicated. Provide duct material, gages, reinforcing, and sealing for operating pressures indicated.
- B. Construct T's, bends, and elbows with radius of not less than 1-1/2 times width of duct on centerline. Where not possible and where rectangular elbows are used, provide air foil turning vanes. Where acoustical lining is indicated, provide turning vanes of perforated metal with glass fiber insulation.
- C. Increase duct sizes gradually, not exceeding 15 degrees divergence wherever possible. Divergence upstream of equipment shall not exceed 30 degrees; convergence downstream shall not exceed 45 degrees.
- D. Provide easements where low pressure ductwork conflicts with piping and structure. Where easements exceed 10 percent duct area, split into two ducts maintaining original duct area.
- E. Use double nuts and lock washers on threaded rod supports.

### 2.03 FLEXIBLE CONNECTIONS

- A. Flexible connections shall be made from "VENTGLAS", Neoprene coated glass fabric.

### 2.04 DUCT LINER

- A. Internal insulation shall be 1" thick flexible fiberglass duct liner conforming to NFPA 90-A, UL 181, and ASTM 1071, 2 pounds per cubic foot minimum density with EPA certified anti-microbial treatment, and with a noise reduction coefficient of 0.70. Material shall be KNAUF Duct Liner EM. Duct Lining shall be applied in accordance with the latest edition of SMACNA, HVAC Duct Construction, Standard Metal and Flexible manual. When ducts are exposed to outside ambient conditions (attics, boiler rooms, etc.), use 2" thick liner unless the ductwork is also externally insulated.
- B. Secure all insulation continuously to the inside of the ductwork, coated side to air stream, with fire-resistive adhesive as recommended by the insulation manufacturer. In addition to the adhesive, secure all insulation to all top, side and bottom panels with mechanical fasteners on 16" max. centers, using spot welded-on pins and push-on type clips. Pins shall not compress the insulation more than 1/8 of an inch. Repair all torn, snagged, and damaged places in the insulation coating with fire resistive adhesive before final installation of ductwork. Seal all abutting edges of insulation with fire resistive adhesive. Arrange all insulation to avoid interference with dampers, and provide a sheet metal liner between the insulation and each damper.
- C. Allowance has NOT been made in the duct sizes for the liner. Oversize sheet metal to accommodate insulation total thicknesses.

## PART 3 – EXECUTION

### 3.01 GENERAL

- A. All ductwork not specifically indicated on drawings or specified elsewhere to be medium- or high-pressure duct shall be fabricated, braced and erected in accordance with SMACNA "HVAC Duct Construction Standards" or the latest edition of ASHRAE "Handbook" at the SPWG Class Construction specified previously.
- B. Adhere to drawings as closely as possible. However, where required to meet structural or other interferences, vary the run and shape of ducts and make offsets during progress of work. Offsets shall be made at 45 degrees or less. Duct routes shall be established and field measurements shall be taken before ductwork is fabricated. Coordinate where pipes or other items are placed around the item. If duct collars for registers or grilles obstruct more than 10% of the cross sectional area, the duct shall be enlarged to accommodate obstruction.
- C. All changes of direction and elbows shall be fitted with turning vanes. Standard radius elbows having centerline radius of 1.5x duct width may be used if space permits. Refer to Fig. 2-2, SMACNA "Duct Construction Standards". Types RE1, RE 2, RE 3 and RE 5 are acceptable. Type RE 4, RE6 thru RE10 shall NOT be used. Mitered elbows greater than 40 degrees shall have turning vanes.
- D. Branch duct take-offs shall be flared, cone, or wye type.
- E. Ductwork shall be free of any objectionable self-generating noise or rattles.

- F. Provide openings in ductwork where required to accommodate thermometers and controllers. Provide pilot tube openings where required for testing of system, complete with metal can with spring device or screw to ensure against air leakage. Where openings are provided in insulated ductwork, install insulation material inside a metal ring.
- G. Locate ducts with sufficient space around equipment to allow normal operating and maintenance activities.
- H. During construction provide temporary closures of metal or taped polyethylene on open ductwork to prevent construction dust from entering ductwork system.

### 3.02 DUCTWORK APPLICATION SCHEDULE

AIR SYSTEM	MATERIALS
Supply Air	Steel
Return Air	Steel

### 3.03 ADJUSTING AND CLEANING

- A. If the ends of the ducts are not covered during construction the contractor shall clean duct systems with high power vacuum machines. Protect equipment which may be harmed by excessive dirt with filters, or bypass during cleaning. Provide adequate access into ductwork for cleaning purposes. Any cleaning of duct systems shall comply with recommendations of NAIMA and NADCA.

### 3.04 SEALING

- A. Seal all duct joints to the seal class in SMACNA Table 1-2 based on the construction class specified in 1.01 previously but the minimum seal class for all ductwork shall be seal class "C."

END OF SECTION 15800